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New Tonnage Comes Out Freely

Market Gives Evidence of Reviving Buying—Railroads Place Important Orders Including 6800-Car Lot—Building Work Grows—Cast Iron Pipe More Active and Stronger—January Pig Iron and Ingot Production Gains

NEW tonnage has come before the mills from many different directions the past week with all the earmarks of the beginning of a buying revival in iron and steel of respectable proportions. Railroad buying is looming up more promisingly, construction undertakings clearly are expanding and indications of some quickening of interest are present in miscellaneous manufacturing lines. Steel production again is working back to a 50 per cent rate with the Carnegie Steel Co. and other large units already on that basis. The Inland Steel Co. is planning a 65 per cent output next week, the Jones & Laughlin Steel Co. has 8 of 12 blast furnaces in commission and independent works in the Mahoning valley are up to 63 per cent.

Lower iron prices have influenced a meager reduction in THE IRON TRADE REVIEW weekly composite price of fourteen iron and steel products which is at $32.89 this week compared with $32.92 last week and $33.45 for all January. The composite is now 12 per cent above February 1913.

Large Orders Placed

Crowning a most impressive list of railroad awards and inquiries is the distribution of 6800 cars by the Burlington, representing the largest single transaction of its kind since the days of the United States railroad administration. These cars call for at least 70,000 tons of steel. New inquiries include 2000 cars for the Norfolk & Western and 1000 for the St. Paul. The Seaboard Air Line plans to rebuild 3000 cars and to order 1700 additional. The Erie railroad has bought 35,000 tons of rails, the Southern 8500 and Bangor & Aroostook 2000. The Baltimore & Ohio has released to the mills 30,000 tons against a 1921 order. The Chesapeake & Ohio is negotiating for 22,000 tons and New England roads for 20,000 to 25,000 tons. Heavier buying of track material is suggestive of more active road repairs. The Union Pacific recently bought 14,000 tons of tie plates, the Norfolk & Western wants 10,000 tons of the same material and 20,000 tons is pending at Chicago.

Automobile builders have been negotiating for some round tonnages of sheets for future requirements. Pittsburgh reports one lot of over 10,000 tons and another of 5000 tons before the mills.

Output Is Rising

For the sixth consecutive month pig iron production gained in January though the change was inconsequential, or 3029 tons. The totals for January and December were 1,645,804 and 1,642,775 tons respectively. The month's gain was provided by the steelworks furnaces as the output of merchant iron fell away slightly. Three merchant furnaces were blown out and none in and eight steelworks stacks resumed while one was retired. The gain in active furnaces, consequently was four, the total on the last day of January being 127 compared with 123 in December.

January's gain in total steel ingot production was much more pronounced than in pig iron and approximated 200,000 tons over December. The estimated annual rate for January was 22,640,000 tons as against 20,270,000 tons for December. Ingot production in January had recovered practically the level of November but was below October.

Requests for cast iron pipe are reviving and it is reported at Chicago, 50 miles of 6-inch and larger will be asked for shortly. This would be the largest inquiry to come to the industry in five years. A gas company at New York placed 5000 tons and another at Chicago wants 4000 tons. The mill pipe market is quieter but output is around 70 per cent.

Close Iron Tonnage

As the pig iron market has slipped a little lower in some quarters, notably at Buffalo, news of some round purchases by pipe and radiator interests have come forth. The American Radiator Co. is credited with a purchase of 25,000 to 30,000 tons from Buffalo makers around $19 for 60 to 90 days delivery and pipe makers in the Birmingham district are reported to have closed for about 20,000 tons. Buffalo makers have been dominating the New England market by going down to $18.50. Valley furnaces have met a lower resale price of $17.75 on basic and have accepted 1000 tons at that figure.

Business Trend and Chart Section Page 394

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Misinterpreting the Court's Findings

CONSIDERABLE bewilderment exists in trade association circles in this country at the present time as to the application to individual organizations of the findings in the so-called hardwood association case recently rendered by the Supreme Court of the United States. This decision has served to arouse doubt in some minds as to the propriety of certain organized activities which hitherto had not existed, to make individual members question the advisability of their continuing connection with such organizations and generally to confuse the field of collective trade progress. Some of the associations have voluntarily dissolved and others have temporarily suspended their functions in the face of the prevailing uncertainty. Yet it may be said with emphasis and absolute truth that the overwhelming majority of trade associations have religiously observed the letter and the spirit of the law according to the most expert interpretation and have had not the slightest inclination or desire to touch the twilight zone in their activities.

The best opinion obtainable among those who have carefully studied the Supreme Court decree is that an exaggerated opinion of the general scope of the latter has gone forth throughout the country, due to misleading newspaper reports, unfortunately worded statements purported to be from official sources, and to hasty impressions gained from certain passages of the court's language. This view holds that the hardwood decision is limited in general application in that it deals with an individual case and a particular set of facts, and that the transgression of the law came from the use to which the combined powers of the organization were put rather than in the form of the association itself.

It is reported from Washington that the attorney general, at the instance of the department of commerce is at work upon a statement which will specifically enumerate some of the things a trade association may do in a perfectly legitimate way. Such a statement of official force certainly is warranted and is rendered necessary by the present sensitive atmosphere that surrounds co-operative trade endeavors. Such a clarifying pronouncement cannot come too soon. The danger is that in indefinite prolongation of the present situation will interrupt if not demoralize the work of trade associations which has been and is a constructive force of progress and of benefit not only to the individual line of business but to the country at large.

Hoover Gives Sound Advice

SECRETARY HOOVER at various times in public utterances has dealt with economic truths in a way displaying a wide grasp of fundamental facts and relationships which has proved of notable informative and educational value to the country at large. It is doubtful, however, whether his amazing ability to cut through the fog of theory and a confused conflict of facts to a sound and acceptable conclusion, ever has been shown to better advantage than by his statement delivered to the interstate commerce commission the past week on the problem of railroad freight reductions.

His analysis of the whole question is of a masterful character reflecting sober and studious deliberations and the reactions of a logical and incisive mind. He concludes his opinion with a definite and constructive program for the country to follow for the best ultimate interests of all concerned. Such a presentation in this form from a high public official is as refreshing as it is unusual.

Secretary Hoover's presence at Washington is a decided asset to the country in keeping it straight on its economies in this unsettled period of affairs through his clear, concise thinking and his equally exact presentation of the real situation.

Business at a Glance

Another Forward Step in Business Paper Service Initiated by The Iron Trade Review

WITH this week's issue, THE IRON TRADE REVIEW inaugurates another exclusive and original feature which marks a new advance in progressive business paper service. This is a BUSINESS TREND SECTION, wherein the exact status and trend of trade will be depicted each week by a series of original graphs. Every significant and basic phase of the financial and business situation will be pictured clearly, concisely and comprehensively.

Business men of the country are devoting more serious study to economic facts and laws, through the effective medium of charts and graphs, than ever before. The violent economic events of recent months have impressed two unforgettable facts upon enlightened business minds. One is that the business cycle is a reality and not a theory. The other is that no longer is it sufficient to study conditions within the narrow sphere of one's own business. The past few years have proved that all lines of trade and all industrial countries, are inextricably interwoven and their prosperity is influenced by the same fundamental causes.

Realization of these facts have brought home more and more to executives the need for broader business information. The war has thrown the economic structure frightfully out of joint. Many months or years will elapse before the return of even-going, normal conditions. In the meantime, fluctuations will continue in trade movements, which will hamper, surprise and perhaps bring disaster to those who refuse to make an intelligent study of general conditions. In other words, in these days of keen competition, no business man can ignore with impunity, basic facts or underlying trends.

The BUSINESS TREND SECTION of THE IRON TRADE REVIEW will provide for its readers in time-saving form, the information necessary to a thorough understanding of the business situation and its tendencies. A specially trained staff will study, sift and present graphically in the most intelligible form, all significant movements of fundamental trade factors such as production, distribution, prices, credit and labor. A few moments spent in consulting these charts will give a better grasp of general conditions than could be obtained through hours of laborious reading.

The charts contained in the BUSINESS TREND SECTION have been compiled from original statistics collected by THE IRON TRADE REVIEW and from data derived from a wide variety of authoritative sources. The section will be expanded from time to time as conditions warrant.

For years THE IRON TRADE REVIEW has been the pacemaker in setting higher standards of service to its field. Its constant origination of new editorial departments and features has given its readers an information service unequaled by any other business paper. The addition of this special department is one more of these forward steps by which THE IRON TRADE REVIEW has kept pace with and has anticipated the practical needs of its readers, and has maintained its position of leadership.

Composite Market Average

Representing the Combined Average Prices per Ton of Fourteen Leading Iron and Steel Products, Yesterday, One Week, One Month, Three Months, One Year and Nine Years Ago

February 8, 1922	February 1, 1922	January, 1922	November, 1921	February, 1921	February, 1913
$32.89	$32.92	$33.45	$34.71	$48.81	$28.05

Products Included Are Pig Iron, Billets, Slabs, Sheet Bars, Wire Rods, Steel Bars, Plates, Structural Shapes, Black, Galvanized and Blue Annealed Sheets, Tin Plate, Wire Nails and Black Pipe

Composite Market Record for Ten Years on Page 432

SCRAP PRICES, PAGE 434, WAREHOUSE, ORE, NUTS, BOLTS AND RIVETS AND PIPE PRICES, PAGE 430

Iron and Steel Prices

Pig Iron

Bessemer, valley	$19.25 to 19.50
Bessemer, Pittsburgh	21.21 to 21.46
Basic, valley	17.75
Basic, Pittsburgh	19.71
Basic, Buffalo	19.00 to 19.50
Basic, delivered, eastern Pa.	19.84 to 20.24
Malleable, valley	19.00
Malleable, Pittsburgh	20.96
Malleable, Chicago	18.50 to 19.00
Malleable, Buffalo, furnace	19.00 to 19.50
Malleable, del., eastern Pa.	21.50 to 23.50

FOUNDRY IRON SILICONS

No. 2 Northern	1.75 to 2.25
No. 2 Southern foundry	1.75 to 2.25
No. 2X East'n and Virginia	2.25 to 2.75
No. 1X Eastern	2.75 and up
No. 1 Chicago	2.25 to 2.75
No. 2 foundry Eastern	1.75 to 2.25

No. 1X, eastern del., Phila.	21.85 to 22.25
No. 1X, Buffalo	20.00 to 20.50
No. 2 foundry, valley	19.00
No. 2 foundry, Pittsburgh	20.96
No. 2 foundry, Buffalo	19.00 to 19.50
No. 2 foundry, Chicago	18.50 to 19.00
No. 2 foundry, Ironton furnace	19.00 to 19.50
No. 2 foundry, Cleveland	20.50
No. 2 foundry, del. Philadelphia	20.85 to 21.25
No. 2 foundry, N. J. tidewater	21.55 to 21.95
No. 2X, eastern del. Phil.	21.35 to 21.75
No. 2X, eastern N. J. tidewater	22.05 to 22.45
No. 2X, eastern del. Boston	23.56 to 24.56
No. 2X, foundry, Buffalo fur.	19.50
No. 2X, Buffalo del. Boston	23.96 to 24.46
No. 2 southern, Birmingham	15.50 to 16.00
No. 2 southern, Cincinnati	20.00 to 20.50
No. 2 southern, Chicago	22.16 to 22.66
No. 2 southern, Philadelphia	24.16 to 24.66
No. 2 southern, Cleveland	22.16 to 22.66
No. 2 southern, Boston	23.16 to 26.16
No. 2 southern, St. Louis	21.22 to 21.72
No. 2X, Virginia furnace	21.50
No. 2X, Virginia Phila.	27.24
No. 2X, Virginia Jersey City	27.66
No. 2X, Virginia Boston	27.58 to 28.08
Gray forge, eastern Pa.	20.00 to 21.00
Gray forge, val. del. Pitts.	20.96
Low phos., standard valley	32.00 to 33.00
Low phos., standard, Phila.	34.00 to 35.32
Low phos., Lebanon furnace	28.00
Charcoal, Birmingham	30.00 to 35.00
Charcoal, Superior, Chicago	30.50 to 31.50

Silvery Iron

8 per cent base	
Jackson county, O., furnace	29.50
Tennessee, Chicago delivery	Nominal
Ohio brands, Chicago	34.82

Bessemer Ferrosilicon

Jackson County, Ohio, furnace	
10 per cent	$38.50
11 per cent	41.80
12 per cent	45.10
13 per cent	49.10
14 per cent	54.10

Ferro-Alloys

Ferromanganese, domestic 80 per cent, Pittsburgh	$63.67
Ferromanganese, 80 per cent, English, c.i.f. Atlantic port	58.35
Spiegel, 18 to 22 per cent furnace spot	24.25 to 25.25
Ferrosilicon, 50 per cent, contract delivered	54.50 to 57.00
Ferrotungsten, standard, per pound contained	35.00 to 40.00
Ferrochrome, 60 to 70 chromium, 6 to 8 carbon, per pound contained, makers plant	13.50c to 14.50c
Imported ferrochrome, 6 to 8 per cent carbon	10.00c to 12.00c
Ferrovanadium, 30 to 40 per cent per pound estimated, according to analysis	$3.75 to $3.95
Ferro carbon-titanium, carloads, producers plant, per net ton	$200.00

Coke

Beehive, Ovens	
Connellsville furnace	$2.90 to 3.00
Connellsville foundry	3.50 to 4.25
Pocahontas furnace	5.50 to 6.50
Pocahontas foundry	6.50 to 7.50
New River furnace	6.50 to 7.50
New River foundry	8.00 to 8.50
Wise county furnace	4.50 to 4.75
Wise county foundry	5.50 to 5.75
Alabama furnace	4.25 to 4.50
Alabama foundry	5.00 to 5.25
Alabama pitch coke	8.00 to 8.50
By-Product	
Foundry, Newark, N. J., delivered	$8.59
Foundry, Chicago, ovens	11.25
Foundry, Boston, delivered	10.40
Foundry, Granite City, Ill., ovens	9.50

Semifinished Material

BILLETS AND BLOOMS (4 x 4-inch)	
Open-hearth, Pittsburgh	$28.00 to 30.00
Open-hearth, Youngstown	28.00 to 30.00
Open-hearth, Philadelphia	33.74 to 34.74
Bessemer, Pittsburgh	28.00 to 30.00
Bessemer, Youngstown	28.00 to 30.00
Forging, Philadelphia	37.74 to 38.74
Forging, Pittsburgh	32.00
SHEET BARS	
Open-hearth, Pittsburgh	$29.00 to 30.00
Openhearth, Youngstown	29.00 to 30.00
Bessemer, Pittsburgh	29.00 to 30.00
Bessemer, Youngstown	29.00 to 30.00
SLABS	
Pittsburgh and Youngstown	$28.00 to 29.00
WIRE RODS AND SKELP	
Wire rods, Pittsburgh	$36.00 to 38.00
Grooved skelp, Pittsburgh	1.50c
Universal skelp, Pittsburgh	1.50c
Sheared skelp, Pittsburgh	1.50c

Shapes, Plates and Bars

Structural shapes, Pittsburgh	1.40c to 1.50c
Structural shapes, Philadelphia	1.76c to 1.81c
Structural shapes, New York	1.78c to 1.83c
Structural shapes, Chicago	1.50c to 1.60c
Tank plates, Pittsburgh	1.40c to 1.50c
Tank plates, Philadelphia	1.76c to 1.81c
Tank plates, New York	1.78c to 1.83c
Tank plates, Chicago	1.50c to 1.60c
Bars, soft steel, Pittsburgh	1.40c to 1.50c
Bars, soft steel, Philadelphia	1.76c to 1.86c
Bars, soft steel New York	1.78c to 1.88c
Bars, soft steel, Chicago	1.50c to 1.60c
Bars, hard steel, Chicago	1.50c
Reinforcing bars, Pittsburgh	1.40c to 1.50c
Bar iron, common, del. Pitts.	1.98c to 2.16c
Bar iron, common, Philadelphia	1.76c to 1.88c
Bar iron, common, New York	1.78c to 1.88c
Bar iron, common, Chicago	1.60c to 1.65c

Hoops, Bands, Shafting

Hoops, Pittsburgh	1.80c to 2.00c
Bands, Pittsburgh	1.75c to 2.00c
Cold finished steel bars, Pittsburgh base	1.90c to 2.00c

Rails, Track Material

Standard bessemer rails, mill	$40.00
Standard open-hearth rails, mill	40.00
Relaying rails, St. Louis	25.00 to 35.00
Relaying rails, Pittsburgh	26.00 to 30.00
Light rails, 25 to 45, mill	1.45c to 1.50c
Angle bars, Chicago base	2.40c
Spikes, railroad, Pittsburgh	2.15c to 2.35c
Spikes, railroad, Chicago	2.48c
Track bolts, Pittsburgh	3.00c to 3.15c
Track bolts, Chicago	3.48c
Tie plates, Pittsburgh	2.00c to 2.25c
Tie plates, Chicago	1.90c to 2.25c

Wire Products

100 lbs. to Jobbers in Carloads

Wire nails, Pittsburgh	2.50c
Plain wire, Pittsburgh	2.25c
Galvanized wire, Pittsburgh	2.75c
Barbed wire, painted, Pitts.	2.65c
Barbed wire, galv., Pittsburgh	3.15c
Polished staples, Pittsburgh	2.65c
Galvanized staples, Pittsburgh	3.15c
Coated nails, per count keg, Pitts.	2.00c

Chain, Piling, Strip Steel

Chain, 1 in. proof coil, Pitts.	5.50c
Sheet piling base, Pittsburgh	1.45c to 1.55c
Hot rolled strip steel, Pittsburgh stamping quality	1.80c to 2.00c
Cold rolled strip steel, hard coils, 1½ inches and wider by 0.100-inch and heavier, base	3.50c

Sheets

SHEET MILL BLACK	
No. 28, open-hearth, Pittsburgh	3.00c
No. 28, bessemer, Pittsburgh	3.00c
No. 28, open-hearth, Phil.	3.86c
No. 28, open-hearth, Chicago	3.38c
TIN MILL BLACK	
No. 28, open-hearth, Pittsburgh	3.00c
No. 28, open-hearth, Chicago	3.13c to 3.38c
GALVANIZED	
No. 28, open-hearth, Pittsburgh	4.00c
No. 28, bessemer, Pittsburgh	4.00c
No. 28, open-hearth, Phila.	4.36c
No. 28, open-hearth, Chicago	4.38c
BLUE ANNEALED	
No. 10, open-hearth, Pittsburgh	2.25c
No. 10, bessemer, Pittsburgh	2.25c
No. 10, open-hearth, Phil.	2.61c
No. 10, open-hearth, Chicago	2.60c to 2.85c

Tin Plate

Per 100 lb. box.

Tin plate, coke base, Pitts.	$4.75

Iron and Steel Pipe

Base Discounts Pittsburgh to Jobbers in Carloads

	Black	Galv.
1 to 3-inch, butt steel	71	58½
1 to 1½-inch, butt iron	44½	29½

Boiler Tubes

Carload Discount 4 Points Larger

Steel, 3¼ to 13 inches, l. c. l.	53 off
Charcoal iron, 3½ to 4½ inches, l. c. l.	28 off

Cast Iron Water Pipe

Without War Freight Tax
Class B Pipe

Four-inch, Chicago	$46.60 to 48.10
Six-inch and over, Chicago	42.60 to 44.10
Four-inch, New York	50.30
Six-inch and over, New York	47.30 to 48.30
Four-inch, Birmingham	39.00
Six-inch and over, Birmingham	35.00
Three-inch, Birmingham	45.00

Class A pipe is $4 higher than Class B.
Standard fittings, Birmingham, base..$100.00
6 to 24-inch, base; over 24-inch, plus $20; 4-inch, plus ; 3-inch, plus $20; gas pipe fittings, $5 higher.

Prices Present and Past

Representative market figures yesterday, one month ago, three months ago and one year ago

	Feb. 8, 1922	Jan. 1922	Nov. 1921	Feb. 1921
PIG IRON				
Bessemer, valley, del., Pittsburgh	$21.46	$21.51	$21.96	$30.96
Basic, valley, del., Pittsburgh	19.71	20.31	20.96	28.71
No. 2 foundry, del. Pitts.	20.96	21.81	22.81	29.96
No. 2 foundry, Chicago	18.50	19.00	21.00	28.60
Lake Superior charcoal, Chicago	30.50	31.50	32.25	38.50
Malleable, valley	19.00	19.55	20.00	28.75
Malleable, Chicago	18.50	19.00	21.00	29.15
*Southern No. 2, Birmingham	15.50	16.15	18.25	27.90
*Southern Ohio, No. 2 Ironton	19.50	19.65	20.50	30.00
Basic eastern del., eastern Pa.	19.84	20.25	20.90	29.95
**No. 2X, Virginia furnace	21.50	21.55	22.80	31.25
**No. 2X, eastern del. Phil.	21.35	21.75	22.50	31.00
Gray forge val. del. Pittsburgh	20.96	21.06	21.96	29.21
Ferromanganese, del., Pittsburgh	63.67	61.90	60.00	96.85
SEMIFINISHED MATERIAL—				
Sheet bars, bessemer, Pittsburgh	29.00	30.00	30.00	43.00
Sheet bars, open-hearth, Pitts.	29.00	30.00	30.00	43.00
Billets, bessemer, Pittsburgh	28.00	29.00	29.00	41.00
Billets, open-hearth, Pittsburgh	28.00	29.00	29.00	41.00
FINISHED MATERIAL—				
Steel bars, Pittsburgh	1.40	1.50	1.55	2.15
Steel bars, Chicago	1.50	1.60	1.68	2.52
Steel bars, Philadelphia	1.76	1.86	1.90	2.50

*1.75 to 2.25 silicon

	Feb. 8, 1922	Jan. 1922	Nov. 1921	Feb. 1921
FINISHED MATERIAL Continued				
Iron bars, Philadelphia	$1.81	$1.86	$1.90	$2.70
Iron bars, Chicago mill	1.60	1.60	1.70	2.66
Beams, Pittsburgh	1.40	1.50	1.60	2.30
Beams, Philadelphia	1.76	1.81	1.90	2.65
Beams, Chicago	1.50	1.63	1.68	2.72
Tank plates, Pittsburgh	1.40	1.50	1.60	2.35
Tank plates, Chicago	1.50	1.60	1.68	2.76
Tank plates, Philadelphia	1.76	1.81	1.90	2.70
Sheets, blk., No. 28, Pittsburgh	3.00	3.00	2.95	4.20
Sheets, blue anl., No. 10, Pitts.	2.25	2.25	2.40	3.35
Sheets, galv., No. 28, Pittsburgh	4.00	4.00	3.95	5.50
Wire nails, Pittsburgh	2.50	2.50	2.90	3.25
COKE—				
Connellsville furnace, ovens	2.90	2.75	3.15	4.85
Connellsville foundry, ovens	3.75	3.85	4.30	6.30
OLD MATERIAL—				
Heavy melting steel, Pittsburgh	14.00	14.50	14.25	15.00
Heavy melting steel, eastern Pa.	12.25	11.75	12.60	14.50
Heavy melting steel, Chicago	11.00	11.20	12.40	15.25
No. 1 wrought, eastern Pa.	15.50	15.50	16.50	20.50
No. 1 wrought, Chicago	11.50	11.80	13.70	15.90
Rerolling rails, Chicago	11.25	12.50	13.90	15.90

**2.25 to 2.75 silicon

Round Tonnage Iron Sale Reported

American Radiator Co. Credited with Large Purchase at Buffalo and Southern Pipemakers with Taking 20,000 Tons—5000 Ton Sale at New York—Valley Basic at $17.75—Buffalo Iron Dominates New England

Philadelphia, Feb. 7.—Pig iron shows a little more activity in this territory. It is learned a Newark, N. J. heater manufacturer bought about 2500 tons of foundry iron and this business together with 5000 tons of foundry iron taken by a Dover, N. J., interest shows that the market on eastern Pennsylvania foundry iron is firm at $20 furnace for No. 2 plain (1.75 to 2.25 silicon) $20.50 for No. 2X (2.25 to 2.75 silicon) and $21 for No. 1X (2.75 to 3.25 silicon). A south Philadelphia consumer is expected to close any day for 1000 tons of foundry iron. A Baltimore consumer has been inquiring for an indefinite tonnage. A leading cast iron pipe maker is buying considerable foundry tonnage. In addition, small demand is improving. Low prices are appearing on Buffalo iron in New England. Eastern Pennsylvania makers consequently are less disposed to compete for New England business. It is learned here that action on the New York-New Jersey vehicular tunnel requirements has been postponed till Feb. 15. Several cars of low phosphorus iron were sold the past week at $28 furnace for copper-bearing. More low phosphorus inquiry is out than for a long time. A lot of 500 tons of gray forge was sold at $19 eastern Pennsylvania furnace which represents the market. The last sale of basic iron, comprising 1,000 tons went at $19.84 delivered eastern Pennsylvania.

More Radiator Iron Purchased

Buffalo, Feb. 7. —Buffalo furnaces are offering iron of foundry grade freely at $19 to $19.50, the market having weakened slightly in the face of reports of $18.50 iron. No definite transaction at this price can be traced to a district maker and for district shipment but furnacemen report having encountered this quotation. Reports of a large tonnage purchase by the American Radiator Co. for 60 to 90 days delivery, brand No. 19 cannot be confirmed officially but are credited generally. One furnace interest reports sale of 4000 tons during the week while another took 1500 tons at prices of $19 to $19.50. A lot comprising 1000 to 2000 tons was sold recently to the United States Radiator Co. by a district maker at about $19.

Shading Being Done

Chicago, Feb. 7.—Uncertainty prevails in pig iron prices in the Chicago district and shading appears to be done from the level of $18.50 for 1.75 to 2.25 silicon iron as some higher silicon tonnages have gone at a price figuring $18 to $18.25 base. The basis quotation of $18.50 in several instances failed to take the business, buyers claiming a lower figure. An Illinois melter bought 300 tons of iron, a Chicago user 100 tons and a Calumet melter 100 tons. Apparently silicon differentials are not being insisted on and competition is making a spotted market. Lake Superior charcoal iron is quoted at $27 to $28, furnace, but little demand exists. Low phosphorus inquiry is slight and the present delivered price on this grade is $36 to $37. Silveries are inactive at the Jackson county price of $29.50 for 8 per cent.

New Low Record Made

Pittsburgh, Feb. 7.—A new low price for basic iron from a producer was made by a valley interest last week when it took the order from the Allegheny Steel Co. for 1000 tons for immediate shipment to Brackenridge, Pa. at $17.75 valley furnace. Other interests had quoted $18 and $18.25 valley on this lot and some resale iron had been offered at $17.65 valley.

On the whole the pig iron market

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is quiet and largely localized. The Cambria Steel Co. is understood to have been taking business in and around Johnstown, and other makers are absorbing the demand near their respective furnaces, a condition accentuated by high freight rates. Some sellers report that the situation never was so dull in their experience and with the exception of another 1000 ton sale of bessemer iron to an Ohio user, regularly entering the market, practically nothing is doing in that grade. The price on this tonnage was $19.50 but the silicon content is understood to be exceedingly high. Since other bessemer is quoted at $19.25, from $19.25 to $19.50 still is considered representative of the market. Average prices of basic and bessemer iron for January, as compiled by W. P. Snyder & Co. were $18.1875 and $19.594, respectively.

Foundry iron is particularly dull this week. A Pittsburgh sanitary iron manufacturer bought 500 tons at $19, valley basis but the iron will not come from the valley. The prevailing quotation here is $19 valley, but this is not well tested. Some off-grade foundry iron has not been offered here by an Ohio interest at $18 valley but one or two prospective buyers claim to be uninterested because the iron is really offgrade basic. A sale of malleable involving 200 tons is reported at $18.25 valley but offgrade basic was involved. Gray forge without sales or inquiries remains nominally on the same basis as No. 2 foundry iron, namely $19 valley. Low phosphorus iron is quoted at $32 to $33 with interest confined to one or two small lot inquiries.

Melt Shows An Increase

Cleveland, Feb. 7.—Shipments are making the best showing of the pig iron market in this territory at this time. All furnace companies with headquarters in Cleveland and with plants in this city and elsewhere report a continuing increase in the amount of iron moved this month to date. This improvement taken with the fact that January was the best month in the year, excepting only October, tends to show that the current melt is growing. Some companies report several cases of ordering out of high priced tonnage which has been inactive upon their books; in other instances the iron was the first to be taken in a year. New business is relatively small in the aggregate and still is made up largely of small orders for early delivery, with few lots as much as 500 tons. One maker in the week sold about 3500 tons in mixed tonnages and another 2500 to 3000 tons. Prices continue to show weakness where any attractive business is involved. The American Radiator Co. was the purchaser of 1500 tons additional for Detroit, of 1.75 to 2.25 silicon iron, and the business is reported to have gone to a lake maker at something like $20 delivered, equivalent to less than $18.50 furnace. Usually makers are able to get at least $19 base furnace, especially in nearby territory and where they do not have to absorb freight disadvantages. Some makers continue to quote $19 base valley and a sale of 500 tons to a sanitary ware manufacturer in the Pittsburgh district at that level was closed this week. The local market continues at $20 to $20.50 base, Cleveland furnace. Several small sales of 1.75 to 2.25 silicon at $20 and of 2.25 to 2.75 silicon at $20.50 Cleveland furnace, were closed in the week. Radiator manufacturers at Johnstown, Pa., have closed for some tonnage and a Springfield, O., consumer is inquiring for 200 tons. The B furnace of the Hanna Furnace Co. at Detroit, is being blown in this week to replace the A stack which was damaged by a blowout recently. The American Steel & Wire Co. has resumed operations at one of its Central group of furnaces, this city, which has been banked. This company now is operating three furnaces in this city.

River Haul Cuts Price

St. Louis, Feb. 6.—Sales of pig iron aggregating above 1000 tons in St. Louis and the surrounding district have been made in the past few days by the Sloss-Sheffield Steel & Iron Co., at an equivalent figure understood to be largely below the prevailing base quotation for southern iron. These transactions and price were made possible by loading the iron on barges at Sheffield and Florence, Ala., for conveyance on the Tennessee river to Metropolis, Ill., and there transferred to freight cars for distribution to points north of the Ohio river. It is stated this route will be pursued in future shipments, giving a low transportation cost against which competition by less favorably located plants will be more difficult. While the exact figure at which the sales were made was not divulged, it was sufficiently attractive to induce melters who have been holding off for several months to close business. The general tone of the market continues to improve. While the volume of sales and inquiries is not large, there is growing evidence that melters are taking more interest, particularly, users of foundry iron. Several of the larger interests in the district proper, who recently placed April 1 as the earliest date for resuming activities, now expect to start on part time within the next few weeks. Actual sales aside from the Sloss-Sheffield transactions, are confined to car lots up to 150 tons. On all these lots purchasers are insisting upon prompt shipment. The largest single inquiry was from a southern Indiana melter for 400 tons, for the first quarter. Prices generally are weak, but the most recent recessions are believed to have set the low point on the present movement. A firm offer of $15 Birmingham for a round tonnage of southern iron was turned down and $15.50 generally is quoted for all rail delivery. The northern product is steady at $19 furnace.

Pipe Makers Close Tonnage

Birmingham, Ala., Feb. 6.—Sales of pig iron in the Birmingham district are showing a little more strength, both as to number and as to quotations, $16 for No. 2 foundry (1.75 to 2.25 silicon) now being given by producers as the base. Some of the larger local consumers have been in the market for pig iron and cast iron pipe interests are said to have taken upwards of 20,000 tons while soil pipe makers have been buying in small lots. Small lot sales are announced for shipment to the North and Middle West as well as a little into the Southwest. Sales have been made as low as $15.50 but furnace interests will not admit that price is the prevailing base. Resumption of operations at various iron consuming industries in this district bespeak a healthier melt during the balance of the month. Sales are again being made into Illinois, Indiana, Ohio, and even into Michigan. Production has not been increased recently, though one of the furnaces of the Woodward Iron Co. remains banked. The Gulf States Steel Co. will be making basic at Alabama City between Feb. 15 and 20, the furnace now being dried out. Negotiations are said to be under way for a large tonnage of pig iron with promise of transactions being consummated before the end of the month.

More Strength At Cincinnati

Cincinnati, Feb. 6.—The pig iron market here is strong and on the whole, taking into account some new inquiries that have just come out, appears to be slightly more active than at any time during the month of January. It develops that a recent purchase of 5000 tons of No. 2 southern by the Williamson Heating Co., this city, which it was reported was done on a basis lower than $15.59, Birmingham, was really a $16 base transaction, confirmation of the sale at that price having been made today by the Cincinnati representative of the southern furnace. Two other recent sales to Cincinnati district melters, aggregating 300 tons are reported at the same price and current quotations generally are $16, Birmingham base. The past week's sales of southern Ohio foundry iron have been uniformly in small tonnage lots, such as 100 tons taken by a consumer at Dayton, O., and one car load each by three local consumers. Indiana melters are in the lead with new inquiries in this market. The LaBelle Foundry Co., Anderson, wants 450 tons of No. 2 foundry; the Union Sanitary Co., Noblesville, has inquired for 500 tons for delivery between now and June 1; the Inter State Car Co., Indianapolis, has asked for a considerable tonnage of both No. 2 foundry and high silicon iron; a Terre Haute melter will take 100 tons of foundry and a like tonnage of silvery, and another central Indiana consumer is in the market for 500 tons of northern foundry. The market is regarded as in much better condition than at any time this year. Northern iron is quotable at $19 to $19.50 base, southern Ohio furnace with average sales closer to the top than the bottom figure.

New England Prices Weaken

Boston, Feb. 7.—While a fairly large tonnage of pig iron has been sold in New England in the last week or 10 days, the number of buyers has been small, and inquiry at present is almost negligible. Prices have weakened in nearly all districts supplying New England. Practically all Buffalo furnaces will quote a basis of $18.50, furnace, or $24.96, delivered to New England points. In some cases Buffalo furnaces are waiving the silicon differentials and quoting the same price, $18.50, for No. 1X (2.75 to 3.25 silicon). During the past week, a textile machine manufacturer bought 2000 tons of No. 2X (2.25 to 2.75 silicon) and No. 1X. Part of this is understood to have been placed

with a Buffalo furnace at $18.50, furnace, or $23.68, delivered. It is said also that part was placed below this figure. A western Pennsylvania furnace taking a freight rate 28 cents higher than the Buffalo interest is thought to have obtained some of the tonnage, which at the same delivered price would be $18.22, furnace. Other recent sales include 1200 tons to an eastern Massachusetts stove works; 500 tons to a Connecticut consumer; 500 to 1000 tons to a Massachusetts heater manufacturer; and 600 tons to another Massachusetts consumer. This latter order was for No. 2X and was divided among four furnaces. One of the lots went to a western Pennsylvania furnace at $18.50, furnace; 200 tons to a Buffalo furnace at $18.50, furnace; 100 tons to another Buffalo furnace at the same price, and the remainder to an eastern Pennsylvania furnace at approximately the same delivered price, or $19.90, furnace. About the only inquiry of any size which is before dealers at present is that of the Massachusetts heater manufacturer who is expected to place another lot during the coming week. The extent to which some eastern Pennsylvania furnaces would go to obtain business is not known, and transactions involving cut prices are carefully guarded. One eastern Pennsylvania furnace is understood to have quoted $19, furnace, or $23.06, delivered, and in Buffalo a round tonnage would command $18.25, furnace, or $23.71, delivered. Eastern Pennsylvania furnaces are quoting $22, delivered, on the New York tunnel job, for delivery through this year and all of 1923. Quotations are made with clauses covering freight rate changes.

Demand Is Improved

New York, Feb. 7.—Demand for pig iron has broadened somewhat in the metropolitan district in the past week. Total sales of foundry iron during the week range from 12,000 to 15,000 tons. A Dover, N. J., melter purchased 5000 tons for second quarter delivery, while a pipe maker took about 2000 tons for three eastern plants. Included in smaller sales were several lots of 400 and 500 tons each, some for spot and some for second quarter delivery. The American Locomotive Co. is understood to have closed on 200 tons of low phosphorus for which it was reported inquiring a week ago. A Newark, N. J., heater manufacturing interest, which has been in the market for approximately 2500 tons of foundry for second and third quarters, as yet has not closed on its requirements. An Orange, N. J., melter is inquiring for 800 tons for shipment to Aug. 1. Another melter has an inquiry in the market for 600 tons, for spot delivery. There are also a number of smaller inquiries current. Two Massachusetts melters have not yet acted on their inquiries for 2000 and 1000 tons respectively. Eastern Pennsylvania foundry iron appears to be maintained firmly at $20 furnace for No. 2 plain (1.75 to 2.25 silicon); $20.50 for No. 2X (2.25 to 2.75 silicon) and $21 for No. 1X (2.75 to 3.25 silicon), although some makers are asking $21.50 for the latter. The Buffalo market reflects further weakness and $18, Buffalo, has been done on both No. 2 plain and No. 2X.

Furnaces Inquire for Coke

More Interest Shown in This Grade, and Prices Are Stronger—Fifty Ovens Added—Foundry Demand Continues Fairly Active

COKE PRICES, PAGE 374

Pittsburgh, Feb. 7.—The past week in the beehive furnace coke market was fairly active, in a comparative sense. Another interest has added 50 ovens to its list of those producing 48-hour fuel. For some time buying has been exceedingly limited, so that the issuance of a few inquiries for a total of about 20,000 tons for the furnace grade gives the market an appearance of activity. The inquiries are for 25 carloads up to 5000 tons for immediate shipment or shipment over the remainder of February. The largest of the inquiries came from the Donner Steel Co., Buffalo, and others were issued by eastern furnaces. The coke market is somewhat stronger, the main reason being that coal and coke producers are experiencing a more active coal market in view of a possible strike April 1. They would sooner sell coal at $2, the equivalent of which in a coke price would be $3.75. Some have set $3.75 as their minimum; others will not go below $3, ovens, and one sale of about 50 cars of standard furnace coke at that level is noted this week. Sixty cars of high phosphorus coke brought $2.90. An eastern interest closed on its requirements of standard furnace coke for the remainder of February at $2.90, so that the spot market this week is quotable at $2.90 to $3. The $2.75 price which prevailed for several weeks past has disappeared, except insofar as it is applied to heating coke or off-grade coke. Several lots of heating coke continue to move at prices $2.60 to $2.75 ovens. Spot demand for foundry coke continues, coming from various foundries in carload lots of one to five a week. Some of the foundries are stocking a few carloads. Makers assert that possibly within a week or two this demand will recede and are moving carefully about adding ovens. At present $3.50 to $4.25 appears to represent the quotable market. Production according to the *Connellsville Courier* for the week ended Jan. 28 was 90,350 tons, as compared with 86,550 tons the previous week.

Strike Fear Increases Demand

St. Louis, Feb. 6.—More activity is noted in the demand for coke, due principally to a disposition of users to stock up against a coal miners' strike in the spring. There is improvement in purchasing for current consumption, and the low ebb of metal melting is reflected in lack of contracting for future requirements. Prices remain about steady, 72-hour Connellsville foundry coke selling at $3.50 to $4.75, and the furnace product at $3 to $4. By-product makers report a better movement of domestic sizes during the past two weeks, but the two leading interests have more than 100,000 tons on their stockpiles. Shipping specifications on coke for industrial use, especially from gas companies, are good. The coal market has been helped by the cold weather, and purchasing by industrial plants to store.

Price Cut Has Little Effect

Birmingham, Ala., Feb. 6.—Lower prices for coke, announced a few weeks ago, have had little effect. Freight rates continue to restrict market activity. Local consumption of coke is showing some improvement, as various foundries resume or continue operations. Beehive coke production is not as large as it was a year ago. The Republic Iron & Steel Co. and the Yolande Coal & Coke Co. are the principal manufacturers of this grade at present. Foundry coke is being sold on a basis of $5, and the furnace grade at 50 cents to $1 per ton less. The Alabama By-Products Co. still reports that its sales are equal to production. Some coke is being shipped outside of this district.

Market Quiet, But Prices Firm

Cincinnati, Feb. 7.—Coke prices in this district are firm, sellers obtaining the top prices although business is confined almost entirely to small spot tonnages. Demand for heating coke is active and this grade is fractionally higher than at any time previous to this season. Practically no inquiries are current. The aggregate of the past week's business was smaller than in some time.

Foundry Demand Fairly Active

New York, Feb. 7.—Trading in foundry coke has continued fairly active during the past week. Some demand appears to be due to fears of a coal strike. Prices are unchanged. As a rule, standard foundry coke is selling at $3.75 to $4.50, Connellsville, although as far as known no hand-drawn coke is obtainable at less than $4. In numerous instances, special brands of foundry coke are selling at $5, Connellsville. The northern New Jersey by-product cokemaker continues to quote $8.59 on by-product coke delivered at Newark, and other northern New Jersey points.

Sales Made at Buffalo

Buffalo, Feb. 7.—Sales agencies here report inquiries for 2600 tons of coke of all grades. Demand for heating coke is good. Foundry coke is offered at $4.50.

Price Reduced in New England

Boston, Feb. 7.—New England by-product coke producers have announced a reduction in price from $10.40 to $10.15 per ton, delivered to consumer. Coke demand continues light, although several dealers report an increase in shipping specifications. Market observers look for an early increase in coke buying as the combined result of the lower prices and the threatened coal strike.

Buy Bars in Small Lots

Increased Demand from Small Manufacturers Is Reported but Orders Are Limited—1.40c Still Is Quoted on Attractive Tonnages

BAR PRICES, PAGE 374

Chicago, Feb. 7.—A feature of present buying of soft steel bars is an increased demand from small manufacturing plants and machine shops. Some steel makers note customers are requiring more raw material and report a gratifying total of small lot sales. Another important indication is that better specifications are being filed for soft steel bars by agricultural implement manufacturers who have been out of the market for a long time. No large buying or specification by this interest was expected and this additional business is in the nature of a surprise. It is thought possible it is a reflection of current developments in the tractor trade. Prices on soft steel bars are unchanged from a range of 1.60c to 1.75c on ordinary business, with 1.50c, Chicago mill, available for buyers of large tonnages for car construction.

Demand for bar iron has fallen off and mills which have been able to continue operation several weeks are now idle. Railroads have practically ceased buying after being fairly active and other users betray no interest. Quotations remain at 1.60c to 1.65c, Chicago mill. Demand for hard steel bars continues lacking.

Interest Is Sluggish

Pittsburgh, Feb. 7.—Merchant steel bars continue to be sold mostly in small lots although occasionally an attractive tonnage comes up for negotiation. On these generally 1.50c, base Pittsburgh, is quoted at the start but since 1.50c is the prevailing price on single carloads, 1.40c is the general figure for closing of tonnages giving suitable operations to bar mills. A mixed lot of about 3000 tons of plates, shapes and bars was sold recently at the 1.40c, base Pittsburgh, figure. Interest by users is sluggish as they continue to buy for momentary needs.

No impetus as yet is imparted to the refined iron bar market where the tendency to buy in small lots is even more pronounced than with steel bars. Refined iron is quoted around 2.15c, base Pittsburgh, while 4.00c continues to be quoted on double refined as well as low phosphorus melting bars. Occasionally a small lot for railroad use will be purchased but otherwise this character of buying is practically nil.

Tonnage Well Sustained

Cleveland, Feb. 7.—Orders of sizable tonnage for steel bars are not numerous though the tonnage is well sustained by a fairly large number of small purchases. One inquiry for 300 tons of soft steel bars is current and automobile parts manufacturers have been recent purchasers of 400 to 500 tons. Now and then jobbers are entering the market for some tonnage as stocks with them as well as with consumers are low. Prices remain at 1.40c Pittsburgh for the more attractive and at 1.50c Pittsburgh for the smaller lots.

Demand Is Improved

Philadelphia, Feb. 7.—The steel bar demand is somewhat better but the total volume is comparatively small. Attractive lots generally are going at 1.40c base Pittsburgh.

Inquire For 570 Tons

Buffalo, Feb. 7.—The only sizable inquiry for bars before the market is for 570 tons which probably will be divided among several mills. Small tonnages are being placed, but the market is not active.

Cold Drawn Buyers Numerous

Pittsburgh, Feb. 7.—While operating schedules among cold-drawn steel manufacturers are not increasing noticeably, a decidedly better feeling exists. Large tonnages are not in evidence but buyers are more numerous and even though small lots for the most part are involved in purchases, the aggregate is pleasing. Automobile companies, typewriter manufacturers and textile machinery producers comprise the most active group and while some of the larger interests in each class still are exchanging stocks among constituent companies, some buying has to be done. On certain orders 2.00c, base Pittsburgh, is the market price; on certain inquiries 2.00c is the quotation, but when the order finally is written on the books the closing figure is shown to be 1.90c, base Pittsburgh. While 1.80c has been reported of late, this price originated under special circumstances and is not representative of the general market.

Bolt, Nut, Rivet Orders Small; Prices Irregular

NUT AND BOLT PRICES, PAGE 430

Cleveland, Feb. 7.—While orders for bolts and nuts are still confined to small quantities, makers report orders are fair. Carlots and less are the usual specification, although occasionally a larger tonnage is placed. Little ordering for stock is being done. It is understood one warehouse interest in this district recently placed some small business. This latter interest is understood to have taken no action on an inquiry for 8,000,000 bolts of assorted sizes. Bolt makers here are interested in the awarding of contracts on the New York-New Jersey vehicular tunnel, which were to be closed today. Between 4000 and 5000 tons of bolts will be needed.

Rivet demand is small but prices are being fairly maintained, although shading of as much as $1 a ton is reported here and there. One large maker here reports several fairly sizable orders in the past week. Some interest is being shown in the New York tunnel job, which will require 175 to 200 tons of rivets.

Larger Orders Expected

Pittsburgh, Feb. 7.—While some large orders for nuts, bolts and rivets are expected shortly, these have not come to hand as yet and buying continues in haphazard fashion. Users confine purchases to requirements, and jobbers only aim to keep well-balanced stocks. This means that many less than carload lots are moving with an occasional mixed carload and a less occasional straight carload. Quotations apparently are based upon the size of the orders under negotiation.

Structural and boiler rivets generally are quoted at 2.25c and 2.35c, base Pittsburgh, but since as low as $5 per ton under that has been quoted, the full spread of the market is 2.00c to 2.25c and 2.10c to 2.35c, base Pittsburgh, respectively.

Little Bolt Inquiry

Chicago, Feb. 7.—Manufacturers of bolts and nuts continue to run their plants at a low rate. Inquiry is scarce. Conditions are practically unchanged and comparatively little of this material seems to be required. Prices are irregular and every transaction brings out its own set of figures.

Hoop Orders Spasmodic

HOOP PRICES, PAGE 374

Pittsburgh, Feb. 7.—Because of the policy adopted by buyers of hoops and bands to harmonize purchases with needs, orders are spasmodic. The trade expects this character of buying will continue until freight rates are lowered which will encourage the stocking of material. Hoop and band makers generally are showing less inclination to quote low prices and while some 1.85c or 1.90c prices appear occasionally in connection with hoops, the more general quotation now is 2.00c, base Pittsburgh. The same thing applies to bands where the minimum of 1.75c still shows itself at times, although 2.00c is the prevailing quotation.

Set Safety Congress Date

Detroit has been selected as the meeting place of the national safety congress to be held Aug. 28 to Sept. 2, inclusive, under the auspices of the National Safety council, Chicago. A local committee to handle the preliminary details relative to the meeting has been named with S. C. Mumford, president of the Detroit Safety council, as chairman.

Fabricated Surplus Is Up

Washington, Feb. 7.—Bids will be received up to noon Feb. 15 by the Emergency Fleet corporation on 105,000 net tons of fabricated steel located at the Hog Island, Pa., shipyard. The material has been divided into seven lots, ranging from 10,000 to 30,000 tons. The largest single lot, 30,000 tons, consists of punched plates. There are also lots of 20,000 and 10,000 tons each of punched plates, two lots of 10,000

and 12,000 tons each of built-up members, and two lots of 11,000 and 12,000 tons each of channels.

New Ore Prices

Wanted by Furnace Companies—Small Tonnage Is Sold

ORE PRICES, PAGE 430

Cleveland, Feb. 7.—A great deal more interest in new prices of iron ore is shown by furnace companies at present than was noted at this time a year ago. Practically every large shipper has requests for information on prices, and it is apparent that furnace companies want estimates for purposes other than inventories or taxes. They are overstocked with ore purchased at last year's prices, and are trying to calculate their loss. The interest therefore does not proceed from a disposition to buy, for there is no tendency in that direction, but from a desire to know what the new costs are to be.

Mine operators are figuring their costs for 1922, and as about 20 mines have resumed operations since last fall some of them are in position to obtain fairly accurate figures. One large operator places the reduction at 35 to 50 cents per ton, made up chiefly of saving in wages. To this would be added a reduction, if any, in the upper lake freight rate, and a reduction in vessel transportation. The rate case is still pending. A meeting of shippers representatives was held in Cleveland this week to prepare for a resumption of the hearing in Chicago. Vessel rates will not be determined until later

The ore that is being mined underground at present costs at least 15 cents more than that mined for direct shipping. The tax on stockpiled ore is 10 cents a ton; and an additional charge of 5 to 10 cents is involved in loading the ore from stockpile. These charges were considered when mining was resumed to create work for idle men. The United States Steel Corp. is still paying its mine labor $3 per day of 10 hours, and its miners $3.70, as compared with $2.10 for labor and $3 for miners, paid by the majority of independent companies. Among the mines recently opened on the latter basis was the Berkshire, of the Oglebay-Norton Co., Menominee range.

One sale of about 5000 tons of manganiferous ore has been made to a furnace in the Central West on a basis of last year's prices. The ore was sold from lower lake dock.

The Lake Superior Iron Ore association gives the following data on shipments from Lake Erie ports in January and for the season since April 1, 1921:

	January	Season	Balance on dock Feb. 1
Buffalo and Tonawanda	1,237	189,463	302,465
Erie	657	284,452	457,442
Conneaut	38,329	4,770,666	1,656,107
Ashtabula	80,943	2,413,495	2,564,343
Fairport	26,693	1,428,513	256,423
Cleveland	10,854	2,214,287	1,346,289
Lorain	52,820	1,042,704	621,042
Huron	....	509,233	678,020
Toledo	....	151,797	341,085
Total	211,533	13,004,610	8,223,216
Previous year	723,294	33,992,292	9,217,089

Plate Activity Continues

Placing of Ship and Tank Work Sustains Fair Demand—Export Needs Expanding—Market Well Established at 1.40c

PLATE PRICES, PAGE 374

Chicago, Feb. 7.—Orders for freight cars now in the hands of builders are yielding gratifying specifications for steel plates, and the placing of several thousand more cars assures mills a continuous source of orders and specifications. Demand for tanks and boilers is not holding up and plate mills have little other source of new business than carbuilding. The Burlington railroad has let the major part of its large inquiry for cars which will call for 70,000 tons or more of plates, shapes, bars and other forms. Prices on plates continue at 1.60c to 1.75c, Chicago, for the usual run of business, with car building material at 1.50c, Chicago mill.

The Sinclair Oil Co., has let ten tanks of 80,000 barrels each to the Chicago Bridge & Iron Co. The tanks are for Texas, calling for about 2000 tons.

Fire Boats are Figured

Cleveland, Feb. 7.—A fair tonnage of plate business is being booked by the mills, though prices are unsatisfactory and even smaller lots show a tendency to work towards 1.40c Pittsburgh which has been the figure on the larger tonnages. An additional contract for a 3500-ton boat has been awarded to the Collingwood, Ont. yard but there have been no developments in the pending negotiations for new construction on the American side. Lake yards are understood to be figuring on the total of three new freighters and two passenger vessels but any awards may not be made for sometime.

Demand Improves at Boston

Boston, Feb. 7—The demand for plates in this market shows signs of improvement. Boiler makers and other fabricators making stacks and tanks report better conditions. Several plate manufacturers have received a larger aggregate of orders during the last week than for any week so far this year. Individual tonnages are exceedingly small, carload orders being an exception. A contract has been placed for a reservior tank in greater Boston, requiring 300 tons of plates. This order, it is understood, was placed at close to 1.45c, Pittsburgh. On smaller orders 1.50c, Pittsburgh, is being maintained. One plate maker has turned down several orders in this market offered at slight concessions below 1.50c.

Export Inquiry Improves

New York, Feb. 7.—The requirements for the New York-New Jersey vehicular tunnel on which bids were to be opened today, comprise the biggest tonnage in the plate market here. For the five caissons, together with the cofferdams, locks, etc., 7000 tons will be required. For the six shields, 300 tons each, or 1800 tons, and for the 22 safety screens, 52 tons each, or 1100 tons, will be required. In addition there will be some miscellaneous plate requirements for the tunnel. The Carnegie Steel Co. has booked 4000 tons of plates for 20 tanks to be erected for the Mexican Petroleum Co., at Carteret, N. J. An important feature of the market is the extent to which export inquiry for plates has improved. A number of inquiries are current from Japan and China, involving 50 to 3000 tons each, and it is expected that some business will result soon. The American Car & Foundry Co. has placed some plates for the construction of several hundred cars for export. The American Locomotive Co. is expected to close soon for about 400 tons of plates for 13 locomotives which it booked recently. Generally, plate demand shows more vigor here. The market appears established at 1.40c, base Pittsburgh, on desirable tonnages and efforts to shade this figure have proved unavailing.

The George Lawley & Son Corp., Neponset, Mass., has booked an order for a steel launch in addition to a similar vessel now under construction in its yard.

Negotiations In Progress

Pittsburgh, Feb. 7.—Negotiations are in progress for a few lots of plates, 1000 to 5000 tons each. On attractive tonnages it is not difficult to obtain 1.40c, although on smaller lots, which are fairly numerous, 1.50c is the prevailing figure. One lot of 1500 tons was sold this week at 1.40c, base Pittsburgh. Fabricators are bidding on various jobs involving both plates and shapes. It is understood that a large interest has been awarded 20 tanks by the Mexican Petroleum Corp. involving 4000 tons of plates.

Seeks 1500 Tons of Ship Plates

Philadelphia, Feb. 7.—Pusey & Jones Co., Wilmington, Del., has taken two boats for the Baltimore Steam Packet Co., and not for the Old Dominion Line, as previously reported. The company is negotiating for 1500 tons of plates for this job. The Sun Shipbuilding Co., has a tentative contract for five canal barges, but the work is held up subject to the completion of financial arrangements. Shipyards in this district are bidding for two car floats for a Brooklyn interest, and two car floats for the Pacific coast. Some were interested in several grain barges and one ferryboat which the American Car & Foundry Co., is to build at Wilmington, but learned that these vessels are to be built of wood. The Reading railroad is inquiring for 200 tons of repair plates. No action on the Burlington's inquiries for locomotives is expected until after Samuel M. Vauclain returns from Europe about Feb. 15. The American Car & Foundry Co. has booked a steel launch for the Dupont interests to be constructed at Wilmington. The Bethlehem Shipbuilding Corp. booked a steel schooner yacht from Keith Spalding, to be built at Wilmington.

Scrap Buying Is Limited

Consumers' Orders Small and Buying Lags—Prices Firm—New York Tunnel Needs, 30,000 Tons, Attract Attention

SCRAP PRICES, PAGE 434

Chicago, Feb. 7.—Except for occasional carloads the market for iron and steel scrap at Chicago is devoid of buying and no activity is evident. Some consumers are taking small lots in a hand to mouth way but refrain from taking material to put in stock. Perhaps the best trading now is being done in cast scrap, but even this is being taken only in carlots. Open-hearth grades are not in demand and rolling mill scrap is a drug on the market, inasmuch as demand for that material has fallen off sharply. Rerolling rails and similar material are without demand. In general railroads are not offering much scrap, but the Chicago & Northwestern has issued an unusually heavy list, offering 4000 tons. In this assortment are 550 tons of steel axles, 500 tons of miscellaneous steel rail and 400 tons of No. 1 heavy melting steel.

Inactivity Still the Rule

Cleveland, Feb. 7.—Iron and steel scrap in this district continues inactive. No demand has appeared during the past week and inquiries have been few and unimportant. Prices are unchanged but nominal.

Market Still is Quiet

St. Louis, Feb. 6.—The market for scrap iron and steel continues quiet. Apparently no particular effort is being made by dealers to do business. Considerable uncertainty and division of opinion exists relative to prices and operators are marking time until something more definite develops. There were, however, some round tonnages taken by two or three of the leading steel interests, the aggregate of which was close to 6000 tons. This material was all purchased at bargain rates by the industries concerned, and will be laid down against future requirements. Price trend is easier although due to the absence of specific transactions in a number of grades, the quotations given are more or less nominal. Heavy melting railroad steel was off grade a half point, and similar declines were noted in railroad miscellaneous scrap machine shop turnings, angle splice bars (steel) and old horseshoes. Railroad offerings in the week included a list from Missouri, Kansas & Texas, 1400 tons; one from the St. Louis & San Francisco, 700, and one from the Pennsylvania, southwestern division, 4500 tons. Yard stocks are large and yardmen are willing to dispose of their accumulations. At the moment there is more material coming in than going out. Inquiries for the various grades of scrap from other centers are for the most part too low in price to interest local dealers.

Round Tonnage Not Purchased

Philadelphia, Feb. 7.—Iron and steel scrap dealers in this district in the past few days have shown considerable interest in the report the Alan Wood Iron & Steel Co. purchased 10,000 tons of steel scrap. However, it was learned there is no foundation to the report. This company a week ago was reported as purchasing 2500 tons, and this transaction, it is understood, was of a special character, being on an exchange basis. The market in this district generally is quiet, little trading being reported.

Stocks Are Low

Buffalo, Feb. 7.—Low stocks of scrap are contributing to a brisk market with the result that prices are holding up but not much scrap is changing hands. Practically every foundry in the district and throughout the state has put out tentative inquiries for heavy cast scrap in connection with the New York tunnel lettings. Responses to these bids are light and are bringing out a $16 to $17 price which is so close to what pig iron can now be purchased that it is unlikely any considerable tonnage of cast scrap will figure in the jobs. Heavy melting steel is strong at $13.50 with the largest local user actively in the market. All mills seem to be increasing operations. The interest shown by Pittsburgh consumers in the turnings and borings here last week did not affect the market as most of the tonnage acquired was placed in Pittsburgh, Detroit and Cleveland.

Inactivity More Pronounced

Pittsburgh, Feb. 7.—Absence of activity marks the scrap trade to a greater extent than any time during the depression of the past year. The only movement noted is in connection with recent railroad awards, most of the Pennsylvania railroad tonnages going to dealers. The Weirton Steel Co. continues to take fair tonnages of the lighter grades of scrap. The Jones & Laughlin Steel Co. and the Pittsburgh Steel Co. are out of the market although the latter is expected to enter shortly since it contemplates starting four open hearths immediately. The West Penn Steel Co. and the Allegheny Steel Co. are not buying. Lower quotations are prevailing but these are largely uninteresting to scrap users and unattractive to dealers with yard stocks accumulated at high figures. Difficulty lies not alone in disposing of scrap but in picking it up, scrap producers desiring to hold off for higher prices. Several grades are down 50 cents per ton this week, namely railroad coil and leaf springs, couplers and knuckles; low phosphorus billet and bloom crops and steel punchings; sheet bar crops, iron and steel car wheels, etc., while other grades are down only 25 cents per ton, namely heavy melting steel, machine shop, shovel and axle turnings. No. 2 railroad wrought, ordinarily quoted on the same basis as heavy melting steel, is 25 cents under owing to the fact a buyer of heavy melting steel always is not willing to pay the same price for No. 2 wrought.

Demand Is Unsatisfying

Boston, Feb. 7.—Dull demand for scrap iron and steel is reported by all local dealers. Inquiry has been stimulated somewhat because of the New York tunnel job, which is expected to take 30,000 tons of scrap. This, however, gives a false impression as bids are asked by many different sellers covering the same tonnage. Pennsylvania steel mills are nearly all in the market for heavy melting steel and $12.00 to $12.50 delivered eastern Pennsylvania is freely offered. This, however, is not an attractive figure in the Boston market where the freight rate is $4.90, which means that dealers cannot offer more than $7.25 to yard owners. A Worcester consumer of heavy melting steel has been in the market several times since the first of the year and, is now understood to have closed on 6000 tons or more which is sufficient for several months. The bureau of supplies at Washington is offering for sale miscellaneous lots of scrap located at Newport. R. I., Waterbury, Conn., Portsmouth N. H., and Hingham, Mass. Demand for cast scrap is unchanged and recent sales in eastern Massachusetts for No. 1 machinery have been at $18 delivered.

Demand Again Is Dull

New York, Feb. 7.—Following the purchase of about 30,000 tons of heavy melting steel by three eastern mills recently, the local scrap market has again taken on an aspect of dullness. With the exception of fairly substantial purchases of cast scrap by two New Jersey consumers, there is little material moving of any description. Much interest is manifested in the opening today of bids on the New York-New Jersey vehicular tunnel. Approximately 30,000 tons of cast scrap will be required, this tonnage to be purchased over the next two years in all likelihood. China is closing on a substantial tonnage of high grade steel scrap. Prices during the past week are unchanged.

Prices Are Maintained

Cincinnati, Feb. 7.—The iron and steel scrap market here is weak. Against a continued light consuming demand there has been a notable increase in production of certain grades and heavy tonnage is being offered local dealers. Some of this is finding its way into the hands of consumers, mills having bought for spot use a trifle better tonnage during the past week. Foundry users are taking extremely light tonnage.

Sales Still Are Few

Birmingham, Ala., Feb. 7.—Scrap iron and steel is moving slowly in the South. Quotations continue weak though few changes are noted in the list quoted by dealers during the past several weeks. Several of the high pressure and soil pipe foundries of this district are producing on a fair basis but the usual amount of old material is not being purchased. No encouragement has been received as yet as to freight rate modifications, following a request for reductions a few weeks ago.

Market Is More Active

Detroit, Feb. 7.—A slightly livelier market in iron and steel scrap the past week has not altered prices to any extent. Demand is picking up, with en-

couraging news from the mills. The supply of scrap is in considerable quantity, with the automobile plants going on a larger basis than in some months.

Warehouse Demand Is Small But Steady

WAREHOUSE PRICES, PAGE 430

Cleveland, Feb. 7.—Demand for iron and steel materials out of warehouse is slightly improved, jobbers in this district report. The leading interest states its warehouse business for the first week of February has been more than double that done in the first week of January. Prices are holding at the established levels and practically no shading is reported. Large orders are not reported but the small ones being placed are numerous and in the aggregate the business done is fairly sizeable.

More Activity is Noted

New York, Feb. 7.—Better demand has developed in the local warehouse market, all descriptions moving in larger volume with the exception of plates and shapes. The situation, however, is still far from active. Prices are unchanged.

Demand Falls Off

Philadelphia, Feb. 7.—While demand for iron and steel materials out of stock is smaller than in the preceding week, the movement still is in excess of the average of a year ago and jobbers regard the situation more cheerfully.

Strip Buying Erratic

STRIP PRICES, PAGE 374

Pittsburgh, Feb. 7.—Erratic buying of strip steel is reported by makers in this district. Users are planning strip buying programs on the way their own business develops from week to week. An active week usually is preceded and followed by a quiet one. Cold-rolled strip steel is quoted at 3.50c, base Pittsburgh, and while on hot-rolled makers are less inclined to offer concessions than a few weeks ago, the full spread of the market is 1.80c to 2.00c, base Pittsburgh. Several automobile manufacturers are planning to increase schedules and some already have done so. Dodge Bros. have been the recent purchaser of sizable tonnages of both sheets and strips against its increased program of 500 cars per day starting Feb. 1. Strip mill operations average approximately 35 or 40 per cent of capacity.

Needs Railroad Material

Washington, Feb. 7.—Sao Paulo, Brazil, is to open bids March 15 on 10 locomotives, 300 stock cars, 200 flat cars and 140 kilometers of rails, according to reports. Germany still leads in shipments of iron and steel to Brazil but German orders in several important lines are decreasing because of increasing prices, states a cable dispatch to the department of commerce.

Negotiate for Auto Sheets

More Than 15,000 Tons Involved in Two Inquiries in Pittsburgh—Demand for Blue Annealed Increases—Confidence Shown in Prices

SHEET PRICES, PAGE 374

Pittsburgh, Feb. 7.—Widespread demand for sheets in small lots from various consuming lines continue to characterize the market in this district. Several large lots of automobile sheets are under negotiation, principally for Michigan manufacturers. Automobile makers are estimating future requirements based on the experience of the past two or three weeks. One lot of about 5000 tons and another for more than 10,000 tons are being figured. Automobile sheets continue to be quoted 4.35c, base Pittsburgh. Makers report a fair demand. Metal furniture manufacturers and car builders are fairly active purchasers of blue annealed sheets. More orders for blue annealed were placed with sheetmakers at 2.25c, base Pittsburgh, in the past week than in several weeks previous. Black and galvanized sheets remain firm at 3.00c and 4.00c, base Pittsburgh, respectively. At times a concession is obtainable on a limited warehouse stock of galvanized, or a stock which some mill wishes to liquidate. Operations continue at an average of about 40 or 50 per cent of capacity, although the Allegheny and West Penn Steel Co. at Brackenridge, Pa., are operating their sheet departments 100 per cent for the time being. The American Sheet & Tin Plate Co., whose operations have fallen off somewhat during the past two weeks, continues to receive fairly numerous orders for all kinds of sheets. Japan is buying intermittently, mostly black sheets, and this is the feature of the export market.

Domestic Buyers More Active

Chicago, Feb. 7.—Firmness characterizes the market for steel sheets and prices are not subject to variation from the schedule of 2.25c for blue annealed, 3.00c for black and 4.00c, Pittsburgh, for galvanized. Such shading as may have prevailed previously seems to have disappeared entirely. In the experience of some producers domestic inquiry is on the increase, producing a much more comfortable situation than when approximately half the demand was from foreign sources. Export business is also good and mills producing sheets are generally in firm position.

Prices are Firmer

Buffalo, Feb. 7.—The price of sheets which appeared to be weakening last week has firmed up and it is difficult to place tonnage at lower than the market. A lot comprising 200 tons of black which carried some extras failed to bring out less than 3.00c, Pittsburgh, from any seller and is understood to have been placed at that price.

Inquiry at Youngstown Better

Youngstown, O., Feb. 7.—Consumers of sheets still are confining their purchases to current requirements. Present bookings are sufficient to warrant the schedule this week of 41 per cent of the sheet mills in this district. Inquiry is reported a shade better, although the tonnage sought is not large. The majority of individual requirements do not exceed 15 to 20 tons. Prices are firm at 2.25c for blue annealed, 3.00c for black, 4.00c for galvanized and 4.35c for high grade sheets, base, Pittsburgh. A large part of the going business is attributed to the stability of prices, creating a feeling of confidence.

Tin Plate Orders

From Container Makers Keep Up Operating Rate—Forward Buying Small

TIN PLATE PRICES, PAGE 374

Pittsburg, Feb. 7.—Spot buying of tin plate is fairly heavy and most large users are booked extensively on future requirements. There is a noticeable lack of forward buying. However, new purchases by container manufacturers, food packers, and others are sufficiently large to make tin plate the leader of all steel products from an operating standpoint. The general average again has been increased until about 70 or 75 per cent is representative with the Liberty Steel Co., Warren, O., operating eight mills after a long idle period and with the inauguration of a partially successful determination to operate plants shut down since June 30 on an open shop basis. The Washington Tin Plate Co. is said to be operating three out of its six mills on that basis while the Yorkville, O. plant of the Wheeling Steel Corp. is scheduled to start today on practically a 100 per cent basis. The American Sheet & Tin Plate Co. is understood to be keeping approximately 85 per cent of its tin mills engaged while the leading independent is slightly below that figure. The McKeesport Tin Plate Co., added two more mills this week making 38 out of 44 active. The market price of tin plate remains unchanged at $4.75 per base box of 100 pounds, Pittsburgh.

Output To Be Increased

Chicago, Feb. 7.—Production at plants of the Illinois Steel Co. in the Chicago district continues at 43 to 44 per cent of capacity, but larger bookings will force an increase of this rate within a short time. One blast furnace stack at the Gary plant has been banked for some time, but can be returned to production on short notice. The Inland Steel Co. is operating at 45 to 50 per cent of capacity. Next week the company will start four or five open-hearth furnaces in the No. 2 plant, which will bring production to about 65 per cent of capacity. This interest now has 11 of its 12 open-hearth furnaces active in its main plant.

Continue To Buy Shapes

Builders Still Active with Sizable Tonnages Placed and Pending—$57 Erected Price Reported—Chicago Union Station Formally Awarded

STRUCTURAL SHAPE PRICES, PAGE 374

New York, Feb. 7.—While not as large a tonnage in the aggregate was placed last week, the structural market continues active. Outstanding inquiry calls for 3500 tons for a free library in Philadelphia, while the foremost award involves 2000 tons for an apartment hotel for this city, placed with the Bethlehem Fabricators, Inc. Prices on the general run of work are from $60 to $65, erected, although especially large tonnage may be had at concessions. The Macy department store job recently closed is reported to have been placed at $57, erected. Plain material is quoted at 1.45c to 1.50c, base Pittsburgh.

Boston Prices Decline

Boston, Feb. 7.—Awards for steel for structural work in New England have been favorable during the last week, although large jobs are still held up. One steel company's New England office reports January as the best month in point of tonnage since some of the months of the fall of 1920. Prices are slightly softer although several lots from 100 to 300 tons placed recently have been at 1.50c, base Pittsburgh.

Larger Shape Tonnage

Chicago, Feb. 7.—Aside from the structural steel for the union station at Chicago, which has been formally awarded to the American Bridge Co. on an estimated tonnage of 17,137 tons, other projects closed during the past week involve a larger tonnage than has been the case for some time. These buildings are scattered widely over the West and represent a wide variety of interest. Apparent settlement of building trades difficulties at Chicago promises excellent structural activity during the coming season with a resulting increased demand for plain material. At present mills are receiving specifications for shapes from car builders in gratifying tonnage, and this is the principal source of immediate business, although construction work also is furnishing its share. The market is steady at 1.60c to 1.75c, Chicago mill, with car tonnage at a concession of $2 per ton under these prices.

Market Broadens Out

Philadelphia, Feb. 7.—The structural steel market here is broader. Bids are expected to be asked shortly on 2000 tons in the first unit of a proposed structure for the Philadelphia *Public Ledger* and also for 1000 tons for the Pennsylvania apartment building, Thirty-ninth and Chestnut streets, this city. The shapes market ranges from 1.40c to 1.45c base Pittsburgh on some attractive tonnages.

Future Activity Seen

Cleveland, Feb. 7.—With the appearance here of an inquiry for 900 to 1800 tons of material for estimating the cost of constructing a cement plant at Toledo and of another for 1200 tons for sintering plant for a local steelmaker, the structural market in this immediate district has taken a broader outlook. Other indications of an active market in the near future have appeared and fabricators are more optimistic than they have been in some time. Actual awards are few and cover only small tonnages, the largest in the week being 200 tons for a bank in Elyria, O. Attractive lots of plain material bring out prices of 1.40c but others are quoted at 1.50c, Pittsburgh.

1.40c is Minimum

Pittsburgh, Feb. 7.—Efforts to develop a price lower than 1.40c, base Pittsburgh, on 1000 tons of structural shapes recently met with failure and from 1.40c to 1.50c represents the general market. The higher level is quoted on unattractive tonnages. Estimating departments all are active, considerable expansion being planned, but lettings are few and far between. Several jobs have been let lately on a noncompetitive basis, the business going to friends in the trade. The two largest jobs pending are the building for the Mellon National bank, Pittsburgh, 2000 tons, and the warehouse for the Belknap Hardware Co., Louisville, Ky., 6000 tons, on both of which bids have gone in.

CONTRACTS AWARDED

First section of head house and office building with concourse, power house and viaducts for the Chicago Union Station Co., 17,137 tons, to American Bridge Co.

Equitable Life Insurance Co. building, Des Moines, Iowa, 3200 tons, to American Bridge Co.

Putnam department store building, Davenport, Iowa, 1088 tons, to Rock Island Bridge & Iron Works Co.

Addition to Santa Fe railroad machine shops at San Bernardino, Cal., 750 tons, to Hansell-Elcock Co.

Conveyor and structural steel supports, for Chicago Union Mail terminal, Chicago, 370 tons, to Pittsburgh Bridge & Iron Co.

Masonic temple, Eureka, Cal., 150 tons, to American Bridge Co.

Library building for University of Montana, Missoula, Mont., 104 tons, to Minneapolis Steel & Machinery Co.

Six girder spans for Monon railroad 100 tons, to Wisconsin Bridge & Iron Co.

Hospital buildings for Sisters of St. Mary, Richmond Heights, St. Louis county, Mo., 914 tons, to reinforced concrete.

Apartment building, Sixty-fourth street, New York, 800 tons, to A. E. Norton, Inc.

Station for Brooklyn Edison Co., Brooklyn, 600 tons, to the Phoenix Bridge Co.

Hyman apartment, New York, 700 tons, to the American Bridge Co.

Duncan apartment, Jersey City, N. J., 1100 tons, to the American Bridge Co.

Station, New York Edison Co., New York, 200 tons, to the National Bridge Works.

Tanks, Mexican Petroleum Co., Cartaret, N. J., 3800 tons, to the American Bridge Co.

Transmission towers, 500 tons, to the American Bridge Co.

Normal training school, Cortland, N. Y., 1000 tons, to the Lehigh Structural Steel Co.

Station, New Jersey state public utilities commission, Fernwood, N. J., 350 tons, to the Shoemaker-Satterthwait Bridge Co.

Bank building, Elyria Savings & Trust Co., Elyria, O., 200 tons, to the Alliance Structural Co.

Britannia Mining & Smelting Co., Britannia Beach, B. C., 1300 tons to the Canadian Northwest Steel Co., Vancouver, B. C.

Factory building, Seattle, 150 tons to the Dyer Bros. Structural Steel Co.

New pulp mill for Flambeau Paper Co. at Park Falls, Wis., 100 tons to Worden-Allen Co.

Paterno apartment, New York, 700 tons, to the American Bridge Co.

Plant, Spring Grove, Pa., 550 tons to the Belmont Iron Works.

CONTRACTS PENDING

High school, Quincy, Mass., 600 tons, bids in.

Abbott Worsted Co. building, Forge Village, Mass., 175 tons, bids in.

Warehouse for Blodgett, Ordway & Webber, Boston, 275 tons, bids in.

Sintering plant, McKinney Steel Co., Cleveland, 1200 tons, undergoing figuring.

Cement plant at Toledo, for Sandusky Cement Co., 900 to 1800 tons, bids being taken for estimates only.

Faculty house, Columbia university, New York, 200 tons, pending.

Building for Joseph Bancroft & Co., Reading, Pa., 300 tons, pending.

Apartment building, Park avenue, New York, 400 tons, pending.

Addition to Home Insurance Co. building, Maiden Lane, New York, 750 tons, pending.

Public library, Philadelphia, 3500 tons, pending.

Campaigne apartment house, New York, 1200 tons, award pending.

Elks lodge building, Bakersfield, Cal., 400 tons, bids asked.

Apartment building, Seattle, 1000 tons, general contract to M. Marcussen. Bids to be opened in April.

Bridge over Mississippi river for Northern Pacific railroad, 1500 tons, bids asked.

Take Bids on 5000 Tons of Concrete Bars

REINFORCING BAR PRICES, PAGE 374

Milwaukee, Feb. 7.—Bids on 5000 tons of reinforcing bars required for the construction of a tank system for the municipal sewage disposal plant here were received last week. They were per ton as follows: Inland Steel Co., $31.90 per ton for new bars and $29.90 for rerolled; Concrete Steel Co., $33.30 new; Calumet Steel Co., $29.24 rerolled; Corrugated Bar Co. $32.95 new; Donner Steel Co., $36.90 new; Paul J. Kalman Co., $34 new; and Interstate Iron & Steel Co., $36.75 new. A contract probably will be placed in 10 days.

Tonnage Aggregate Fair

Pittsburgh, Feb. 7.—A number of small jobs involving the use of reinforcing concrete bars have been let recently, most of which have been for less-than-carload lots. Orders coming to one company here in one week recently totaled 350 tons but one of the largest jobs included involved only 80 tons. The Mellon National bank, Pittsburgh, in addition to 1700 tons of structural shapes, will require about 100 tons of reinforcing bars and a similar tonnage is involved in a concrete pump building for the waterworks department at Tarentum, Pa. The latest word from the Belknap Hardware Co., Louisville, Ky., is that its warehouse project will be carried out although decision has not yet been made as to the type of building.

1500-Ton Job Revived

Cleveland, Feb. 7.—Local contractors are interested in the revived proposal for the erection of a filtration plant at Detroit which will require about 1500 tons of reinforcing bars. Bids are due some time this month. An inquiry for 200 tons for building construction at Elyria is up for figures. The 500 tons for sewerage construction at Warren, O., has not yet been awarded. Indications are that the

1.40c. mill price on reinforcing bars is reasonably steady.

CONTRACTS AWARDED

Waterworks, Verona, Pa., 100 tons to an independent fabricator.

China basin terminal, Seattle, 770 tons, to the Edward L. Soule Co.

CONTRACTS PENDING

Mellon National bank, Pittsburgh, 100 tons, bids being taken.

Pump building, 100 tons, Tarentum, Pa., bids taken until Feb. 17.

Filtration plant, Detroit, 1500 tons, bids asked.

Spring Buying

Of Wire and Nails Gives Market Some Activity—Prices Unchanged

WIRE PRICES, PAGE 374

Pittsburgh, Feb. 7.—Spring trade demand for wire and wire products, particularly nails, is slightly accelerated although for the most part relatively small orders are being placed. Some of these shipments are going forward from the Pittsburgh district via water and one large independent interest is particularly active in taking that method of supplying its customers along the Ohio river with their requirements at low transportation costs. Orders run all the way from a mixed carload up to seven cars at a time of assorted products, mainly wire, barbed wire, fencing, and nails. Prices remain unchanged at 2.25c. for wire and 2.50c. base Pittsburgh, for nails. Cement coated nails are quoted at 2.00c, base Pittsburgh, with few inquiries before the trade.

Some Weakness in Wire

Chicago, Feb. 7.—Selling of wire and nails over the past few days has been disappointingly light, but indications at the opening of the week are that business has come back to a large degree. Weather conditions in the West are held responsible for part of the lull, which is considered only seasonal. Prices are none too firm and shading is being done in several directions, concessions of at least $2 per ton being met frequently. This market has held up well through periods when other forms of steel were in difficulties and indications are the present slackness is only temporary.

Nail Prices Strengthen

Philadelphia, Feb. 7.—Wire nails are firmer and no more business is reported at 2.40c base Pittsburgh, although 2.45c has been done on some sales.

Open Bids on Shell Scrap

Philadelphia, Feb. 7.—The Ammunition Products Co., Washington, was high bidder at $11.13 to $11.43¼ for 13,722 gross tons of empty high explosive shells at the Frankford arsenal. Bids were opened today

Wheel Prices Revised

A revised price schedule on rolled steel wheels effective Feb. 1 now is generally quoted by manufacturers in this line. The revised schedule is designed to equalize previous inequalities. Varying reductions are shown in some classes while others remain unchanged.

Burlington Buys 6800 Cars

Allocates Largest Purchase of Many Months—Has 500 More Pending—Rail Tonnage Placements Aggregate 75,500 Tons—Inquiries Grow

RAILROAD TRACK MATERIAL PRICES, PAGE 374

Chicago, Feb. 7.—Distribution of the major part of its inquiry for 7300 freight cars has been accomplished by the Chicago, Burlington & Quincy railroad, 6800 of them being apportioned among the builders in fairly even proportion. This is the largest purchase of freight cars made in many months and has been awaited for a long time. One thousand of these are steel gondolas for the Colorado & Southern railroad. Placing of the remaining 500 automobile cars is awaited.

While buying of standard steel rails is not going forward at present, much activity is being met in the market for track fastenings, spikes, bolts and tie plates forming an important part of present buying. Probably the total tonnage of tie plates now on inquiry is in excess of 20,000 tons and one inquiry alone calls for 10,000 tons. The New York Central in inquiring for 50,000 kegs of spikes and 5000 to 8000 kegs of bolts. A purchase by the Union Pacific a fortnight ago involved 14,000 tons of tie plates. The Great Northern railroad is inquiring for 2700 tons of tie plates and the Soo line for 1300 tons of the same material.

Seek Rail Tonnages

Boston, Feb. 7.—Several New England roads are expected to close for rails within the next week or ten days. The Maine Central railroad is in the market for 5000 to 6000 tons. The Boston & Maine railroad has not yet announced the tonnage, but it is estimated this road will want 15,000 tons. The Bangor & Aroostook railroad has already closed for 2000 tons at $40, mill.

Asks Bids on 2000 Cars

New York, Feb. 7.—An inquiry for 1000 hoppers and 1000 gondolas for the Norfolk & Western railroad is outstanding in the eastern car market, all other being restricted to inquiries for 100 and less.

Awards of the past month aggregated close to 11,000 cars, the largest of which was placed by the Union Pacific railroad, calling for 4500. New inquiry not closed at the end of January involved about 10,000 cars, among which were 3300 cars for the Pacific Fruit Express.

The Norfolk & Western railroad will open bids tomorrow on 10,000 tons of tie plates. The Delaware, Lackawanna & Western placed orders during the past week for large quantities of screw spikes and track bolts. The New York Central opened bids last Friday, on 4750 to 8000 kegs of track bolts and 8000 to 12,000 angle bars for 80-pound rails. The bids on the angle bars were: Bethlehem Steel Co., 2.50c net mill; Lackawanna Steel Co., 2.40c, base mill; Carnegie Steel Co., 2.60c, net mill; Illinois Steel Co., 2.456c, base mill. The Rail Joint Co. put in a special bid on patent joints at 1.38c per joint. The New York Central opened bids also on 69 items of frog and switch work. This road will open bids tomorrow on 40,000 to 50,000 kegs of track spikes and 45,000 to 60,000 angle bars.

The Florida East Coast Line is inquiring for 600 tons of railroad spikes.

The Erie railroad finally has distributed orders for 35,000 tons of rails for its entire system.

The Norfolk & Western, which has received bids for estimating purposes on 4000 car bodies, shortly is to ask for bids on them from all car builders.

The Seaboard Air Line has organized the Seaboard-Bay Line Co. with $1,500,000 authorized capital for the purpoes of financing the work of reconstructing 3000 freight cars and to have 1750 new ones built.

Buying Rate Diminished

Pittsburgh, Feb. 7.—The Wheeling Steel Corp. was a recent purchaser of 60-pound rails. Competition from rerollers is becoming more keen and in a effort to meet this makers of rails from new steel have gone as low as 1.45c, base Pittsburgh. The general quotation, however, is 1.50c, base.

A few new inquiries for spikes are current from railroads involving 1000 to 3000 kegs each and on standard spikes as low as 2.15c is being quoted. Small spikes, however, are quoted up to 2.35c, base Pittsburgh.

B. & O. Releases Tonnage

Philadelphia, Feb. 7.—The Southern railroad has placed 8500 tons of rails with the Tennessee Coal, Iron & Railroad Co., the remainder of its original inquiry of 26,000 tons being held in abeyance. The Chesapeake & Ohio is inquiring for 22,000 tons and the Baltimore & Ohio has released 30,000 tons on its 1921 contracts, 15,000 tons each to the Carnegie Steel Co. and the Illinois Steel Co., leaving 30,000 still unspecified. This railroad has decided not to buy any new rail tonnage this year.

CAR ORDERS PLACED

Chicago, Burlington & Quincy, 6800 cars as follows: 1000 gondolas to Western Steel Car & Foundry Co.; 500 box, 400 refrigerator and 500 gondolas to the Pullman Co.; 1000 box to the Mt. Vernon Car & Mfg. Co.; 500 box and 400 refrigerators to the General American Tank Car Corp.; 500 composite gondolas, 500 refrigerators and 500 stock to the American Car & Foundry Co.; and 1000 gondolas to the Bettendorf Co.

For export, 300 box cars, to the American Car & Foundry Co.

CAR ORDERS PENDING

Baltimore & Ohio, 40 steel passenger coaches, 2 steel diners, 3 steel baggage and mail and 5 steel postal, bids being taken.

Philadelphia & Reading, 50 suburban type steel passenger cars, bids open Feb. 9.

Philadelphia & Reading, 500 to 2000 steel freight cars, decision still pending as to whether capacities should be 55 or 70 tons.

Norfolk & Western, 1000 gondolas and 1000 hoppers, bids being asked.

Chicago, Milwaukee & St. Paul, 1000 cars, bids asked.

Chicago, Burlington & Quincy, 500 automobiles cars awards pending.

Semifinished Market Dull

Inquiry for 2500 Tons of Slabs, and 500 Tons of Sheet Bars Only Sizable Business Pending—$28 Reported Quoted on Latter

SEMIFINISHED STEEL PRICES, PAGE 374

Pittsburgh, Feb. 7.—An inquiry for 500 tons of sheet bars is being negotiated. This is practically the only demand for semifinished material noted here. While it is reported that $28, Pittsburgh or Youngstown, was quoted on the 500-ton lot, this cannot be confirmed. Makers state that $29 to $30 represents the quotable market, although $28 is appearing elsewhere, notably in the East. Even at $28 billets are inactive and only an occasional small lot of forging billets is moved at $32. While theoretically there should be no difference between billets and sheet bars, quotations on the latter remain firm and unchanged at $29 to $30, Pittsburgh.

Some skelp producers have regular avenues for the disposal of this material but there are few if any open inquiries before the trade. Spang, Chalfant & Co., the Central Tube Co., and a few other buyers in this territory are entering the market only occasionally. Skelp is quoted at 1.50c, base Pittsburgh, but since plates have sold as low as 1.40c, this price is more or less nominal. On wire rod inquiries $36, Pittsburgh, is quoted although some makers insist that $38 still is their quotation. Less than $36 is being done on export, although $33 recently was refused by a large maker here. Export tonnages range from 500 to 2000 tons.

Prices Appear Firmer

Youngstown, O., Feb. 7.—Little activity is displayed in the semifinished market this week, although producers have a good assortment of tonnage on their books for delivery over this quarter. Prices appear to be firmer. Sheet bars are quoted at $29 to $30; slabs $28 to $30; and standard billets from $28 to $30, Youngstown, light billets are held at $30 to $32, Youngstown, with comparatively few sales.

Slab Tonnage Is Sought

Cleveland, Feb. 7.—Principal interest in the semifinished market is directed toward an inquiry for 2500 tons of slabs which a local plate maker has put forth. Otherwise the market is quiet. Some inquiries for sheet bars of from 300 to 500 tons each have been coming out from Northern Ohio and on these the usual quotation is $29 Pittsburgh or Youngstown. Practically no activity is shown in billets.

Cast Pipe Buying

Revives and Inquiries Indicate Coming Activity—Merchant Demand Fair

PIPE PRICES, PAGE 374 AND 430

Chicago, Feb. 7.—Expected heavy buying of cast iron pipe is developing although a tendency is noted for cities to take less than their full requirements instead of covering the full needs for the season at this time. In addition to the formal inquiry now before makers, definite information is in hand indicating at least 50 miles of pipe 6-inch and larger will be asked for within the next six weeks. This makes the best inquiry this industry has enjoyed in the past five years. The National Cast Iron Pipe Co. has been awarded 1300 tons at St. Paul and the Lynchburg Foundry Co. 800 tons at Grand Rapids, Mich. James B. Clow & Sons, Chicago, were awarded 100 tons of class A pipe for the Milwaukee sewage disposal job at $55 per ton, f.o.b. Milwaukee. The United States Cast Iron Pipe & Foundry Co. is low bidder on 300 tons of high pressure pipe for the board of fire commissioners, at Detroit. Bids will be opened Feb. 10 at Minneapolis on 800 to 1000 tons at Brillion, Wis., Feb. 7 on 350 tons. A large gas company is negotiating on an inquiry for 4000 tons. Bids will be opened Feb. 13 at Graybill, Wyo., on 330 tons. Prices have been advanced somewhat and the present quotation on 6-inch pipe at Chicago is $44.10 delivered. Four-inch pipe is $4 higher.

Places 5000-Ton Lot

New York, Feb. 7.—Outstanding among recent awards of cast iron pipe is a lot of 5000 tons for the Consolidated Gas. Co., placed with the United States Cast Iron Pipe & Foundry Co. Municipal demand is dull, and involves 200 tons for the water department of New York City. Except where large tonnages are involved, prices are unchanged.

The General Petroleum Corp. is expected to close shortly for an indefinite tonnage of 4, 5, 6, 8 and 10-inch line pipe.

Merchant Pipe in Demand

Pittsburgh, Feb. 7.—The present fair demand for standard merchant pipe by no means is a substitute for the sizable tonnages of line pipe, casting, oil well country goods, etc., placed several weeks ago and which now are inactive. Standard weight pipe is going forward in ordinary jobber specification quantities, one, two or three carloads at a time, to keep stocks well balanced. But little buying for future requirements is noted. Accumulations of many small orders enable the mills to operate quite heavily, the general average being around 70 per cent of capacity. No real spurt in oil country goods is expected until spring and while one or two large lots of line pipe are current in the East, including one for the Sun Oil Co., these are not being widely circulated here. The card discounts of Dec. 15 are for the most part firm and satisfactory to buyers.

Production Is Improved

Birmingham, Ala., Feb. 6.—Steady production at the plant of the American Cast Iron Pipe & Foundry Co. this week brings about improved output in high pressure pipe in this district. The understanding is warehouses have been running low on stock and the production this week will go toward remedying this as well as meeting improvement in demand. All cast iron pipe companies in this district are now expecting immediate resumption of trading and a number of lettings are anticipated. Alabama cast iron pipe, the larger size, is moving steadily toward the Pacific coast and into the Middle West with some orders expected from northwestern points. Soil pipe plants are speeding up as building develops throughout the country. The Agricola interests at Gadsden have announced the rebuilding of their soil pipe plant which was destroyed by fire a few months ago and before the end of another week there will be several floors producing pipe. Anniston, Gadsden, Birmingham and Bessemer report improved conditions in soil pipe and production.

Foreign Ferro

Of German and British Make Sold in Moderate Lots Last Week

FERROALLOY PRICES, PAGE 374

New York, Feb. 7.—Several sales of moderate lots of German ferromanganese have been made of late and the price on this metal now is $57, tidewater, for 78 to 82 per cent. The metal is to be shipped promptly and the importers declare reports that deliveries of German ferromanganese on past sales have been behind schedule, are unjustified. Sales of several carloads of English ferromanganese have been made during the past week at $58.35, tidewater, which continues to be the price on Engish as well as domestic ferromanganese. The most important inquiry now before the trade calls for 250 to 300 tons of ferromanganese for the Griffin Wheel Co. Several hundred tons of 16 to 19 per cent spiegeleisen have been sold during the past week at $25, furnace, and stocks of this metal are getting low.

As previously stated, stocks of 19 to 21 per cent spiegeleisen have been completely liquidated. Several carloads of 50 per cent ferrosilicon have been sold during the past week at around $57, delivered, which represents the market on moderate-sized quantities.

Quietness Again Prevails

Pittsburgh, Feb. 7.—Quietness again characterizes the ferroalloys market which has suffered somewhat of a relapse. Recently a few buyers came into the market for 50 to 100 tons of ferromanganese, one for the latter amount being issued by a Mahoning valley consumer over a week ago, and these are being held in abeyance. On them American producers are quoting $58.35, seaboard base. An occasional ferrosilicon user comes into the market for a single carload although one seller here recently has been endeavoring to have a large user sign a contract for 500 tons of the 50 per cent material at $55, freight allowed. Other producers have demonstrated their willingness to take $55, freight allowed. From that level to $60, freight allowed, is considered representative. Prices on

foreign ferrochrome are somewhat stronger, it being difficult to obtain a quotation below 12 cents, Pittsburgh.

Decision has not yet been reached by the Youngstown district steel plant which entered the market for 200 tons of 19 to 21 per cent spiegeleisen as to whether it will be able to use the 16 to 19 per cent grade. While the nominal market on the latter is $25 and on the former $26, users will have little difficulty in developing prices 75 cents per ton below these levels.

Ask Bids on Ferroalloy

Washington, Feb. 7.—Bids on 57,000 pounds of ferromanganese and 10,000 pounds of ferrosilicon will be opened on Feb. 21 by the bureau of supplies and accounts, navy department, for delivery at the Philadelphia and Norfolk navy yards. On Feb. 21 bids also will be opened on 500 tons of steel plates and I-beams for the Washington navy yard.

Light Two Furnaces in Pittsburgh District

Pittsburgh, Feb. 7.—The Carnegie Steel Co.'s No. 3 furnace at New Castle, Pa., which was blown in Jan. 30, again is out. The second of its Lucy furnaces at Pittsburgh, however, had the torch applied to it last Saturday on a spiegeleisen burden, thus sustaining the total of 26 furnaces out of 59. The company's steel ingot output is averaging 50 per cent of capacity at present, although this may be increased this week. In some of its plants, including the Ohio works, steelmaking is at the rate of 67 per cent of capacity.

The Jones & Laughlin Steel Co. is adding another blast furnace to its active list to make eight out of twelve blowing, the latest one being added for the production of ferromanganese. Steelmaking by independent producers averages about 40 per cent of capacity. The West Penn Steel Co. and the Allegheny Steel Co. have practically 100 per cent operations scheduled for this week. With the exception of the plate mill, all of the Allegheny company's plants will be operated, including the foundry which has been idle for several months. All sheet mills, open-hearth furnaces and the bar iron mill of the West Penn Steel Co. are being operated. The McKeesport Tin Plate Co. added two tin mills this week.

McFarland Named Manager LaBelle Iron Works

A. J. McFarland, vice president and general manager of the Whitaker-Glessner Co., a subsidiary of the Wheeling Steel Corp., Wheeling, W. Va., has been appointed general manager of La Belle Iron Works, Steubenville, O., another Wheeling Steel Corp. subsidiary. He succeeds G. B. LeVan who resigned effective Feb. 1. Mr. McFarland has been with the Whitaker-Glessner Co. from the beginning, supervising construction of the works at Portsmouth, O., and then managing its operations. Formerly he had been with the American Steel Hoop Co., the Buhl Steel Co., and the Republic Iron & Steel Co.

The Nonferrous Metals

Prices Continue Toward Lower Levels—Factories Using Up Stocks—Electrolytic Down Almost to 13c—Lead Is Steady

	Copper: Electro delivered	Copper: Lake delivered	Spot Straits New York	†Lead New York basis	Zinc St. Louis basis	Spot† aluminum	Spot antimony	Nickel spot
Feb. 1.....	13.62½	13.75	31.75	4.70	4.52½	17.50	4.40	35.00
Feb. 2.....	13.62½	13.70	31.12½	4.70	4.52½	17.50	4.40	35.00
Feb. 3.....	13.62½	13.70	30.75	4.70	4.47½	17.50	4.40	35.00
Feb. 6.....	13.50	13.50	30.75	4.70	4.50	17.50	4.40	35.00
Feb. 7.....	13.45	13.45	32.00	4.70	4.50	17.50	4.40	35.00

†Open market quotation.

NEW YORK, Feb. 7.—Prices of metals continued to sink in the past week, with copper the leader. Outside sellers of copper have been reducing their offering prices more or less regularly. Zinc has been unchanged in the past few days but still is weak, while lead, as usual, is fairly steady. Tin is jumping around in following the London market. The latter center of activity has been weak on all metals, even more so than New York, until today when a little back bone was shown.

The manufacturing situation in the metals shows little change, the cause for weakness being largely a lull in buying after fairly active markets last autumn, and in the meantime factories are using up their stocks. Production also shows little change, except for the gradual increase in copper. A number of mines and smelters are opening or nearly ready to start, but as copper is a long time in the process, it will be late spring before the new metal will be ready to deliver. In the meantime stocks are being cut even in the present dull market, for exports alone are equal to new supply, and have been running heavier than supply. Evidently the copper producers have faith that fairly active demand next summer will reduce old stocks to an exceedingly low point. On the other hand, it is said the present level of the market and reduced expenses make it easier financially to run at a slight loss than to remain closed at a high loss for maintenance.

In the outside market copper is offered down almost to 13c for electrolytic. A little is available at 13.12½c refinery, and this is believed to be the bottom of the market. At 13.37½c refinery plenty is available for prompt and early future. The latter figure is also the bottom of delivered prices for prompt, by some of the smaller producers, and up to 13.50c, with slightly more for early futures. Large agencies in most instances are out of the market, quoting nominally 13.75c and up. Casting copper has not fallen quite so much as electrolytic, and is 12.62½c to 12.75c, with outside lake on a par with electrolytic.

Zinc dropped a little below 4.50c St. Louis and then became steady at 4.50c so far as prices are concerned, but the market still is weak. There was some inquiry for futures today but little business. A minimum of selling has been done for several weeks, but the larger producers show little anxiety as the result of this inactivity. Tin has been going down and up with London, and exchange in its rapid rise lately also is a vital factor in this market. Spot Straits is a little scarce, the monthly statistics showing a cut in stocks, but the tin situation the world over still is weak on account of the great amount of metal available in proportion to new purchases. Use in tin plate is fairly good, both in this country and England. This is the largest single use but it is much less than half of the total, and the other uses appear to be slack indeed.

Lead continues to hang around 4.37½c to 4.40c St. Louis and 4.70c New York. A fair amount of business continues to come out, mostly for early use, and meanwhile stocks continue small all over the world.

Other metals show little change or life.

Mill Products

SHEETS	
Copper, hot rolled 24 oz., min.....	21.25
High brass	16.75
Zinc, ga. 9 to 18 (plates ½c less)	8.50
Lead, full sheets (cut ¼c more)..	7.75
SEAMLESS TUBES	
High brass	18.50
Copper	21.25
RODS	
High brass, round, ¼ to 2½ inch	14.75
Naval brass rod	17.75
WIRE	
Copper	15.00 to 15.50
High brass	17.25

Old Metals

(Dealers' Buying Prices)

HEAVY RED BRASS	
Cleveland	8.00 to 8.50
New York	8.00 to 8.25
HEAVY YELLOW BRASS	
New York	5.50 to 5.75
Chicago	5.75
Cleveland	5.00 to 5.50
ZINC	
New York	2.50 to 2.75
Cleveland	2.00
Chicago	2.50
HEAVY COPPER AND WIRE	
Cleveland	9.50 to 10.00
Chicago	10.25
New York	10.75 to 11.00
RED BRASS TURNINGS	
New York	7.00 to 7.25
Cleveland	6.75 to 7.00
Chicago	6.75
YELLOW BRASS TUBING	
Cleveland	4.50 to 5.00
NO. 1 BRASS ROD TURNINGS	
Cleveland	4.50 to 5.00
New York	5.00 to 5.25
Chicago	4.50
ALUMINUM BORINGS	
Cleveland	4.00 to 4.25

Theater Failure

Reports Are Not Conclusive—Unofficial Opinions Hint Faulty Design

Washington, Feb. 7.—The only official report to date on the Knickerbocker theater disaster is being withheld by District Attorney Gordon pending the conclusion of other investigations, but among the engineers who have examined the ruins there appears to be an almost unanimous opinion that the collapse of the roof was caused by the main truss slipping away from the north wall. Unofficially it is stated that the steel work in the roof appears alright, and the only person to make the charge of defective steel has been Harry M. Crandall, operator of the theater, who is not an engineer.

The main truss extended north and south, from the proscenium to the rear of the theater. At the proscenium the theater was 40 feet wide, at the rear the width was 130 feet. Both sides were approximately 112 feet but one was bowed out. So far as can be determined, the main truss was not tied to the walls nor were the five subordinate ones. The I-beam upon which the main truss rested on the north wall was crushed back a half-inch where the truss formerly rested. The walls, of brick and tile and 18 inches thick, are bulged 5 inches.

That the primary cause was not the weight of the 26 inches of snow on the roof appears to be conceded by all. The part now attributed to the snow is that either it furnished the slight impetus needed to break down the already-weakened roof or else it mercifully reduced the attendance and kept the death list down to around 100 instead of 300 to 400. The subordinate trusses rested only on the tile of the sidewalls.

The origin of the steel that entered into the roof has not been definitely determined. The local firm of C. A. Schneider's Sons, which fabricated it in 1917, went out of business a year later because of the death of Mr. Schneider. The business was taken over by J. H. Ford, an employe of the firm, who now operates the Union Iron Works. According to Mr. Ford, the steel entering into the roof was taken from stock, and at that time the Schneider firm purchased from Bethlehem, Lackawanna, Phoenix and other mills.

Rate on Iron Ore Reduced

Washington, Feb. 7.—Reduced rates on imported iron ore will become effective Thursday on eastern trunk lines from eastern ports to East St. Louis. The new rate from Philadelphia is $7.32 and from Baltimore it is $7.12. It is understood a big cargo of foreign ore is now due at Baltimore.

Ship Scrapping Awaits Treaty Ratification

Washington, Feb. 7.—Ratification of the various treaties and agreements emanating from the Washington conference on the limitation of armament is all that stands today in the way of scrapping some 843,000 tons of American warships. Pending ratification nothing will be done to take these ships out of commission or prepare them for sale as scrap. On order of the President all work is to cease on warships now under construction.

The board of survey, appraisal and sale which recently negotiated the sale of nine obsolete battleships, cruisers and monitors is continuing its efforts to build up a ship-scrapping industry, but the actual sale of the ships to be scrapped because of the arms agreement seems some months distant. On the basis of the calculations of the English, who have found that a warship averages 60 per cent heavy steel scrap, 10 per cent light steel scrap, 5 per cent cast iron, 7½ per cent brass and copper, 2½ per cent lead and 15 per cent wood, dirt, rubbish and waste, as stated in THE IRON TRADE REVIEW of Jan. 12, the ships slated for the scrap heap will yield approximately 510,000 tons of heavy steel scrap, 85,000 tons of light steel scrap, 42,500 tons of cast iron, 63,750 tons of brass and copper and 21,250 tons of lead.

Five hundred and sixty tons of cast iron at the Long Island City, N. Y., depot of the war department has been sold to the McGrath Iron Co., Brooklyn, N. Y., for $13.44 per gross ton. From the same depot 402,054 pounds of scrap aluminum has been sold to the General Aluminum & Brass Mfg. Co., Detroit, for $0.12859 per pound.

Postpone Tunnel Bids

New York, Feb. 7.—Opening of bids on the New York-New Jersey vehicular tunnel, scheduled for today, has been postponed until Feb. 15. The only reason given for the postponement was that it was in the best interest of the public. The requirements of this project include about 115,000 cast iron segments; 547 tons of reinforcing bars; and a quantity of steel wire mesh.

Steel Ingot

Production in January With 1,593,482 Tons Shows Gain of 166,389 Tons

Output of steel ingots during January totaled 1,593,482 gross tons, according to statistics compiled by the American Iron and Steel institute from production figures of 30 companies which in 1920 made 84.2 per cent of the total for the entire country. This output compared with the 1,427,093 tons made in December shows a loss of 166,389 tons. Thus production has partially recovered from the slump suffered in December. As compared with 1,660,001 tons in November and 1,616,810 tons in October, the two high points since the early part of 1921, the January figure shows a loss of 66,519 tons and 23,328 tons respectively.

Following are the institute's production figures for all of 1921 and January, 1922:

1921	Open hearth	Bessemer	All other	Total
Jan....	1,591,281	608,276	3,629	2,203,186
Feb....	1,295,863	450,818	2,796	1,749,477
March..	1,175,591	392,983	2,404	1,570,978
April...	1,000,053	211,755	2,150	1,213,958
May....	1,047,810	216,497	1,543	1,265,850
June....	808,286	193,644	1,476	1,003,406
July....	689,489	113,312	575	803,376
Aug....	915,334	221,116	1,621	1,138,071
Sept...	908,381	265,152	1,207	1,174,740
Oct....	1,369,945	345,837	1,028	1,616,810
Nov....	1,294,371	363,912	1,718	1,660,001
Dec....	1,129,174	296,380	1,539	1,427,093
Total for year.	13,125,578	3,679,682	21,686	16,826,946
1922				
Jan....	1,260,809	331,851	822	1,593,482

The average daily production of the 30 companies in January was 61,288 tons which, compared with 54,888 tons in December, was a gain of 6400 tons. The indicated average daily basis for the entire country was 72,788 tons in January and a gain of 7601 tons over the 65,187-ton rate of the previous month.

Upon the basis of the average daily output for January and 311 working days per year, the approximate annual rate of production for the 30 companies for the month was 19,060,000 tons or 1,990,000 tons better than the 17,070,000-ton rate of December. The annual rate for the whole country as indicated by the January output was approximately 22,640,000 tons which, compared with the 20,270,000-ton rate of the preceding month showed a gain of 2,370,000 tons. This was slightly better than the indicated average rate of the whole country in 1921 which, according to the institute's figures was approximately 20,000,000 tons.

The Pioneer No. 1 furnace of the Republic Iron & Steel Co., Thomas, Ala., during January broke its production record by 441 tons. Its previous best record was made in November, 1921.

Hoover Clarifies Rate Problem

Secretary in Masterly Presentation to Commerce Commission Declares General Reduction Is Unthinkable, While Financial Relief for Carriers Is Greatest Need of Day—Suggests Reductions on Few Basics, Including Iron and Steel

WASHINGTON, Feb. 7.—What faint hopes have remained that sizable freight rate reductions would come out of the interstate commerce commission's general rate investigation have been practically dispelled by Secretary of Commerce Hoover's statement before the commission. In view of the straightened condition of the carriers a horizontal percentage reduction is unthinkable, Secretary Hoover declared. Some reductions in basic commodities, such as coal, metals, wood and agricultural products, would speed returning business, he said, and are desirable even if some class and L. C. L. rates must be advanced. The attitude of the commission has been that whatever reductions, if any, can be made at this time must be confined to such basic commodities as coal and farm products, and it is presumed Secretary Hoover's statement will strengthen the commission's attitude.

The Hoover statement is regarded as constituting a broad-gaged view of the entire transportation matter. Foreseeing a revival of business not more than a year distant that will tax the carriers to the utmost, Secretary Hoover emphatically urged a program of construction and rehabilitation, on the ground that industry will profit more by enduring present rates and enabling the carriers to recover their strength than to slash rates now and force the carriers to go into a boom period with credit drooping and equipment inadequate.

For the iron and steel industry the message of Secretary Hoover is comforting. He pointed out that "the increased rates since 1914 have added nearly 100 per cent to the cost of assembling the materials for pig iron." At least 4000 locomotives and 200,000 cars are needed to bring the carriers once more abreast of potential requirements. Coal and metals were the first and second commodities mentioned when he said: "If I were examining the freight rates I should at once say that coal, metals, wood, and agricultural and other producers' goods should be reduced to the bottom before L. C. L. and class rates are touched."

Aid for Carriers, First Step to Prosperity

BY HERBERT HOOVER

IF WE look at the national economic situation as a whole, the greatest impulse that can be given to recovery from any source whatever is a reduction of rates on primary commodities combined with the immediate resumption of railway construction and equipment. The first depends upon reduction of operating costs, the second upon restoration of credit for our railways. One thing is absolute. Our transportation facilities are below the needs of our country, and unless we have a quick resumption of construction, the whole community—agricultural, commercial, and industrial—will be gasping from a strangulation caused by insufficient transportation the moment that our business activities resume. For the past five years we have had no consequential expansion to our railway transportation machine. With but one interval of nine months in 1918 and 1919 we had a car shortage throughout the whole of the years 1916-17-18-19 and 20. This shortage rose to as high as 160,000 cars with a corresponding shortage of motive power. We paid tremendous sums in commercial losses and unemployment in consequence. We laid it onto the war. We should lay it onto our lack of foresight and antagonism to railroads.

Few people seem to realize the amount of expansion in our transportation machine necessary to keep pace with the growth of the country. And an equal few seems to have any notion of the price we pay for not having it. Our country is more dependent upon railway transport than any other. All others have comparatively greater coast lines and internal waterways. The experience of the twenty years before the war has shown that we must build an extension of lines, including terminal facilities, additional sidings, etc., every year equal to the construction of a new railway from New York to San Francisco. We must add at least 120,000 cars and 2500 locomotives annually to our equipment.

Expansion Less Than Needs

Since we entered the war in 1917 we have constructed at least 10,000 miles of railways less than our increasing population and economic development called for and we are behind in rolling stock by about 4000 locomotives and 200,000 cars. I wish to emphasize that unless we can have an immediate resumption of construction and equipment, our commercial community will pay treble the cost of the whole of them in their losses of a single season. The very moment that we reach anything like normal business we shall see a repetition of car shortages, followed by an increase in the cost of coal to the consumer from $1 to $3 a ton; we shall again see premiums of 20 cents a bushel for the use of cars for moving grain; we shall in fact see a shortage of commodities to the consumer; and we shall see gluts upon the hands of the producers. We shall see factories filled with orders again closed for lack of cars; we shall see large intermittency in employment; and we shall see the usual profiteering in commodities due to a stricture between the producer and consumer.

There would be no difficulty whatever, by basing such losses on the experiences we have already had, to calculate a loss to the American people of a billion dollars for each one of these periodic transportation shortages. Furthermore, there is nothing that is so irrecoverable a loss to the nation as idle shops and idle men. Today we have both. There is nothing that will so quickly start the springs of business and employment as an immediate resumption of construction and equipment of the railways. When business does resume, we shall need all of our capacity for the production of consumable goods. We shall not only find it strangled for lack of transportation, but we shall find ourselves plunging into the manufacture of this very railway equipment and construction in competition with consumable goods for materials and labor. Herein lies the basic cause of destructive price inflation and booms, with all their waste and over-expansion. In times of depression, we should prepare for the future and by doing so we can cure the depression itself.

If we examine the fundamental reasons for failure to resume equipment, we will find them in the loss of confidence in railways as an investment and the competition of tax free securities. We have passed the period of credit strain in this depression. Surplus capital is pouring by hundreds of millions monthly into tax free securities and foreign loans, and yet our railways are unable to finance the most moderate of construction programs. The confidence of the public in railway investments was at so low an ebb before the war that finance by the issue of common and preferred stocks had become impossible and

railway expansion was living on bond issues.

The confidence of an assurance and continuity in earning power to cover this burden of bonds has been even lowered since the war began, because of the uncertainties of both rising and falling prices, of rising and falling wages, of rising and falling rates preventing all regularity of earnings upon which an investor could be convinced, even if no other difficult factors entered into the problem. I see no occasion to go into the labyrinth of past railway finance, its propriety, or lack of propriety, its foolishness or its skill. That generation is gone by. This commission approaches the financial problems of the railways upon the actual value, not upon their issues of securities and I take it we are living for the future, not the past. We want transportation, and we want it with the values of private initiative and clean public service.

If we look to the immediate future with its complete necessity of paring the railway earnings down to little more than bond interest, until we give relief to the shipper, and thus the primary foundation to business recovery, I can see little likelihood of convincing the investor as to his margins of safety. There is an atmosphere that our railways will never again earn profits, and that they are not as an industry worthy of investment, and that because private investors will not come to their assistance nobody can do anything. Far from it being impossible for our railways again to return to a profitable footing, I believe it is possible to demonstrate that on an average they will become very profitable. If we assume that the reduction of prices and wage levels will settle at a plane no lower than 50 per cent over prewar, and if we assume that the present rates are to maintain, and if we assume restored traffic, then the earnings of our railways would exceed 15 per cent on the whole of the commission's tentative valuation. Surely there is room here for safetv to investment, as well as relief to the shipper.

Sees Danger of Setback

The circumstances being as they are, and confidence being at a low ebb, we do not have the equipment necessary for our business. We are driving headlong for a setback to our whole commerce the very moment that we begin to get on our feet. In these circumstances it seems to me vital that the railways as our greatest industry should propose a courageous program of broad visioned betterments and if necessary the government should consider giving the use of its superior credit. It would not cost the taxpayer a cent to give the government guarantee to equipment trusts upon the primary responsibility of the railways the proceeds devoted entirely to improvement and equipment. This is no proposal to take money from the taxpayer. It is a proposal to save him from paying treble the amount of his guarantee in profiteering and losses. It will render a reduction of rates earlier, for unless something is done the improvements will have to be paid over years out of increased rates. Nor would we lose a cent upon the guarantee for if American railways cannot earn interest upon their borrowings let us throw up our hands and prepare for a second Russia.

A real program of construction would in its various ramifications give relief to five or six hundred thousand of our unemployed. It would enable even added numbers to increase their standard of living, and thus give increased market to the produce of our farmers. Our farmers who look to foreign markets for their surplus should stop to consider that our home consumption of meat decreased nearly 7 pounds per capita in 1921, mostly owing to unemployment and that if this decrease could be overcome it would be worth more than a 35 per cent increase in exports.

We talk glibly of giving billions of credits to foreign countries, to increase our farm exports. I wish to say with all responsibility for the statement that a billion dollars spent upon American railways will give more employment to our people, more advance to our industry, more assistance to our farmers, than twice that sum expended outside the frontiers of the United States—and there will be greater security for the investor.

Finally, I want to refer to the veritable witches cauldron being fed constantly with hates distilled from the misdeeds of railway promoters in the past, from the conflicts between the railways and the farmers, between the railways and their workmen. From all the confusion that arises from it we destroy our railways and destroy ourselves. With this commission on one hand assuring honesty in finance, justice to the shipper and the railway investor, with the railway labor board assuring justice to workers and, above all with a great spirit of public service in our generation of railway managers, it is time to call off the witches and take some vision of our national situation if we are to pull ourselves out of this depression.

I wish especially to call your attention to the enormous increase in spread between primary producer's and ultimate consumer's goods. In considering it, we must bear in mind that when we use 100 for both consumer's and producer's goods of 1913, we have already included the spread between producer and consumer at that period. I therefore believe that index numbers indicate an increase of 100 per cent in the actual spread. It is right here where the most of our economic difficulties lie today. Our increased cost of manufacture and distribution bears two relations to the rate question; first, that the increase of rates of 30 per cent to 100 per cent in different commodities are part of it, and are in turn part caused by it; and second, the increased rates bear very unequally on different groups in the community.

Cause Is Complex

If we search for the cause of this increase of spread we shall find therein a vast complex of increased taxation, increased wages, rents, and a dozen items, all reacting upon each other, and also expressing themselves in increased cost of operating the railways. For instance, the total increase in national, state and municipal taxes since 1913 is approximately $5,640,000,000. At the present purchasing power of the dollar, our total national productivity is probably somewhere around $50,000,000,000, of which over 10 per cent must now be devoted to increased taxes. This sum of money must be obtained either from the producer or the consumer and in any event a considerable part of the taxes contributes to widen the spread. Because the increase in spread due to taxes necessitates a spiral of increased wages, rents, etc., and before its force expends itself, my own opinion is that possibly 20 points in the

Hoover Emphasizes Confidence in Future

WE ARE recovering from the destruction and inflation of the greatest war in history. We are suffering from the waste, the extravagance, and over-expansion of the postwar boom. The war has brought about great shifts in the movement and price levels of commodities between nations.

It might be profitable for our people to get a somewhat clearer perspective of our own, and the world's, troubles and problems. Even a superficial survey must bring us up out of an atmosphere of gloomy introspection into an assuring realization that, great as our dislocations may seem to be, we relatively are in an enviable position. Our nation is unshaken and as a people we are getting our bearings in a world of perplexing economic adjustments. While there is unemployment and lack of profit making, we are free of panic. We are comparatively more restless than injured. As heavy as our tax burden is, it is still less than one-half as great in proportion to our national productivity as the other states in the war.

The violence of our readjustment, however, is without parallel and we sometimes tend to color our measures for the future by the depression we are in. The fact is that we must predicate all plans for the future on the ultimate return of the American people to a normal economic activity, with our annual progress in the expansion of our production, of our plant and equipment, of our skill and our efficiency. There can be no question that this return will take place, and no responsible body will approach our problems on any other basis. Not one of us would submit to the charge that we were not prepared to bet against any odds upon the future of the United States. Our problem is to expedite this recovery—to speed up employment of our workers, and thereby find market for our farmers.

distorted index number flows from increased taxes.

The increase of railway rates since 1913 in Class I, railways 1921, is about $2,600,000,000, of which about $1,400,000,000 are due to wage increases and about $160,000,000 to tax increases. If our traffics were normal the total increase of rates would be more like $3,500,000,000. These sums enter into this increase in the spread and carry with them a further trail of increased living costs and again a spiral of higher wages, rents, etc., in all other branches of manufacture and distribution. No one can say to what particular tableland of prices and wages we may settle upon, but it is a certainty that the exchange value of producer's goods will not again line up with consumer's goods unless we can decrease the costs and eliminate the wastes of our whole manufacturing and distribution trades.

The involved complex of transportation rates was obviously originally based on some relationship to the value of commodities, mitigated by competition. In other words, the old slogan of "what the traffic will bear" had some economic background. But this entire conception of ratemaking was destroyed by horizontal raises.

The increases in railway rates during the past five years have fallen with extraordinary inequality on different commodities and different groups of people in the community. The country grew up, its industries were distributed under ratios of costs between different commodities, ratios between raw materials and finished goods, ratios between the farm and city. These have all been distorted by the horizontal rises. The increases in rates since 1914, for instance, have added probably less than 1 per cent to the price of cotton goods on the average haul but it has added probably 60 per cent to the price of coal. The increased rates since 1914 have added nearly 100 per cent to the cost of assembling the materials for pig iron.

If I were to discuss the rates charged today I should say at once that a decrease in passenger rates is not nearly so vital to the community as freight rates, for passenger rates do not enter into the 'spread' in proportion to the relative volume of earnings. If I were examining the freight rates I should at once say that coal, metals, wood, and agricultural and other producers goods should be reduced to the bottom before L C L and class rates are touched.

With the gradual return of the traffic to normal, with decreased operating costs, relief in rates will be available, and it would be an economic crime to apply such relief by horizontal reductions to all rates thus giving relief to higher priced goods and travel, when the vital mainspring of our economic life, our agriculture and fuel and metals are choked.

Determination of anything in the nature of permanent rate basis is in my own view impossible at the present time because:

The last five years of changing administration, irregular traffic and wildly fluctuating wages and prices of materials give us but little reliable historical criteria upon which to base the future. We are in the midst of violent economic readjustments, of a profound industrial depression. No one can determine to what plane the reduction in operating costs will settle. No one can estimate the volume of traffics that are probable for any particular period ahead. It appears to me, therefore, that the commission will need to temporize with the situation for some time, and that its conclusions may well fall into three periods:

1.—The immediate present.

2.—During the early period of decreasing costs and increasing efficiency and slowly recovering traffics.

3.—Normal operations.

If we survey the results of the past year in the application of present costs and rates, we find many railways failing to earn interest upon their borrowed capital. We find some others more fortunately situated who have earned dividends on their share capital. One or two exceptions of low bonded indebtedness have done extraordinarily well on their share capital. If we survey the situation by districts, in order that single instances do not mislead us, we will find that the whole of the Class 1, southern roads, barely covered bond interest, while the most fortunate group, the western roads, show an earning of only 4 per cent in 1921 upon their tentative valuation. Moreover, it is obvious that maintenance has been held to a low level and new equipment and extensions practically nil.

The present earnings in their perilous closeness to bond obligations seem to me to dispose of the question of immediate important rate relief, if we do not wish widespread receivership and shocks to our whole commercial fabric.

I believe there are cases where earnings could be increased by lower rates. I know that it is contended that such opportunities do not exist, but no one can review the testimony given here during the past few weeks without concluding that the rates in special instances are stifling business. These directions are perhaps not important in the whole problem of rates, but I am convinced that lower rates would recover lost traffic, such as export coal, substitutions in building materials, gains in water competition, etc.

We must assume that those railway wages and supplies which are out of line will at least in part follow down to the levels of decreased cost of living; we must assume that the efficiency that is slowly emerging after the government management will still further increase; we must assume that the volume of traffics will increase toward normal.

I have the feeling that the railways, being our greatest business, will agree that all these savings should be instantly devoted to relief in the rates on primary commodities in order that we should expedite the recovery that can only come through decreased spread between producer's and consumer's goods.

I recognize that the uncertainty and slow reduction of rates in this fashion will itself delay business recovery because of the uncertainty of business as to its future costs. If our railways were in position to stand the temporary shock it would be infinitely better to drop the rates on primary commodities tomorrow, our business recovery would come faster. But we cannot ask the impossible.

If we look further to normal times, we could make a rough calculation that present wages and costs at say 50 per cent above prewar would show that the railways can earn somewhere around $1,500,000,000, in excess of the 6 per cent minimum upon tentative valuation. As I have stated, relief is first more critically needed in the rates on primary commodities.

Some estimates given to me indicate that approximately 35 or 40 per cent of revenues are involved in the groups more urgently needing relief. I think it will also bear calculation that in the income assumed above that primary commodities can eventually be reduced to prewar rates, and still place earnings upon a basis that will inspire such confidence in investors as will secure the free flow of investment capital into construction. It is not to be expected that capital for these purposes will be available at the rate that does not exceed the taxfree securities at least 2 to 3 per cent.

Forceful Features in Hoover's Address

IF WE look at the national economic situation as a whole the greatest impulse that can be given to recovery from any source whatever is a reduction of rates on primary commodities combined with immediate resumption of railway construction and equipment.

I wish to emphasize that unless we can have an immediate resumption of construction and equipment our commercial community will pay treble the cost of the whole of them in their losses of a single season.

If we examine the fundamental reasons for failure to resume equipment we will find them in the loss of confidence in railways as an investment and the competition of tax-free securities.

If American railways cannot earn interest upon their borrowings let us throw up our hands and prepare for a second Russia.

If our railways were in position to stand the temporary shock it would be infinitely better to drop the rates on primary commodities tomorrow—our business recovery would come faster. But we cannot ask the impossible.

No one with a week's observation of government railways abroad or with government operation of industry in the United States will contend that our railways could ever be operated as intelligently or efficiently by the government as through the initiative of private individuals. Moreover, the welfare of its multitude of workers will be far worse under government operation.

Charge Practice Limits Trade

Manufacturers Assail Pittsburgh Plus in Federal Trade Commission's Basing Point Hearing at Milwaukee—Witnesses Cite Rates Showing Competitors' Advantage and Steelmakers' Profits in Collecting Unpaid Freight

MILWAUKEE, Feb. 7.—Milwaukee crane manufacturers are put in an unfavorable position in competing with eastern companies for business in the territory east of Chicago as a result of effect of Pittsburgh plus prices on steel, declared H. Squire, president of the Milwaukee Electric Crane & Mfg. Co. at Monday's session of the hearing in this city in the suit of the federal trade commission against the United States Steel Corp. and its subsidiaries. The hearing is now in its second week with prospects of running into a third. R. P. Dieckelman, secretary of the Pressed Steel Tank Co., also testified Monday.

Mr. Squire said crane manufacturers near Pittsburgh generally were able to underbid the Milwaukee companies on eastern business because the difference in costs represented by freight charges from Pittsburgh enabled eastern competitors to lay down their work cheaper. He selected Alliance, O., as a typical example. Freight from Pittsburgh to Alliance is 12½ cents per 100 pounds and the rate to Miwaukee is 41½ cents. While an Alliance shop may lay down work in Milwaukee at a freight charge of 10 cents per 100 pounds more than local shops have to stand, a Milwaukee manufacturer is at a disadvantage of 68 cents per 100 pounds in laying down a job in Alliance because it had to pay freight on material and again on the completed job.

Analysis of Mr. Squires' figure showed that Pittsburgh plus worked to the advantage of the Alliance maker when competing with the Milwaukee company to the extent of 14 cents per 100 pounds in Chicago, 22 cents in St. Louis, 9½ cents at Minneapolis, 14½ cents at Duluth, and 12½ cents at Seattle and San Francisco.

Under questioning by Steel corporation counsel, the witness admitted he was assuming that the Alliance company was buying on a Pittsburgh base the same as the Milwaukee company and that all other costs were equal and the difference in freight rates, earned or unearned, was the principal factor.

Mr. Dieckelman testified as to the effect of Pittsburgh plus on competition with companies at Sharon, Pa., and Warren and Niles, O., manufacturing pressed steel tanks, drums, barrels and similar containers. He said the Pressed Steel Tank Co. used about 18,000 tons of heavy sheets and light plates in the average year and made two classes of goods, standard and patented containers, in the ratio of 40 per cent standard and 60 per cent patented. He declared it was exeremely difficult to sell standard goods in eastern territory because of the advantage manufacturers in the same line in the East enjoyed in the matter of freight rates from Pittsburgh on raw materials. Practically all business in the East now consists of patented lines which represents about 20 per cent of the total in this line. Competitors at Sharon, Warren and Niles enjoy a 10½-cent freight rate from Pittsburgh, or an advantage equivalent to 31 cents over Milwaukee, he said, and this forms a controlling factor in the failure to sell standard goods in their own territory and has the effect of limiting distribution to points to which freight rates were on a more equal basis.

Some Relief Now

Drop forge manufacturers whose business is largely with automobile shops, which are centered mainly in Detroit, Cleveland, Toledo and Indianapolis, testified that while they found temporary relief in the fact that for several months they have been able to purchase steel on a Chicago base, a reversion to the Pittsburgh plus practice of selling cannot help having a most serious effect upon their business.

It was pointed out by two principal witnesses of the drop forge industry that because of the comparatively larger percentage of wastage in fabrication in producing forgings than in most other products employing rolled steel material, this industry is suffering most seriously from Pittsburgh plus in competing with eastern drop forge shops. Milwaukee shops pay freight on the raw material from Pittsburgh to Milwaukee, lose from 50 to 60 per cent of the material in producing the finished forging and then pay freight from Milwaukee to Detroit, Cleveland or other cities on the finished goods, while the eastern competitor has to pay freight only once.

The relation of Pittsburgh plus to the metal stamping trade was another feature of the Milwaukee hearing. Carl F. Garney, purchasing agent and a director of the E. R. Wagner Mfg. Co., North Milwaukee, maker of metal stampings, automobile parts and hardware specialties, testified that buying steel on a Pittsburgh base not only resulted in a sacrifice of profits from normal, but actually in a loss of business to eastern competitors in any territory where the freight rate from Pittsburgh is less than that to Milwaukee. On a certain line of automobile parts, Mr. Garney said, the company had to cut its profits 7 to 8 per cent to meet eastern competition.

Frank B. Nanscawen, traffic manager of the Heil Co., tanks, motor truck dump bodies, etc., testified that he believed Milwaukee might "become one of the chief centers of steel manufacturing in this country if relieved of the handicap of paying a premium of 41½ cents per 100 pounds for steel delivered to Milwaukee from a Gary or Milwaukee mill."

While on the stand early in the hearing, J. P. Heil, head of the Heil Co., submitted invoices which showed that steel was billed f.o.b. Milwaukee. C. J. Heil, purchasing agent, was called to analyze these invoices and submitted figures purporting to show that the price included freight from Pittsburgh. Additional invoices were submitted showing purchases from companies other than the Steel corporation subsidiaries, which likewise were billed f.o.b. Milwaukee, but with prices at Pittsburgh plus freight. Attorney Steinhauer, in opposing objections of corporation counsel, won his point that he desired the invoices to go into the record to show that independent mills were obliged to sell on a Pittsburgh base to meet corporation competition, and that Pittsburgh plus was a general practice which tended to lessen competition.

Up to the close of the first week, no testimony had been given tending to show the probable or possible effect upon the iron and steel industry as a whole in the event that Pittsburgh plus were abolished.

International Trade More Active

Germany Places Additional Orders for Foundry Iron in Britain—Belgium and Australia Buying Black Sheets—Sheffield Inquiring in United States for Axle Boxes—Strike Cutting Down German Production—Rhine Markets Quiet

The Iron Trade Review Staff Cable

European Headquarters,
THE IRON TRADE REVIEW,
2-3 Caxton House, Westminster, S. W.1

Sterling—$4.32

LONDON, Feb. 6.—International markets are broadening. Sales of pig iron for export are fair, and include additional orders from Germany for 2000 tons of foundry iron. Belgium has purchased 5000 tons of black sheets, and Australia, 1000 tons. The price of galvanized sheets has reached a new low level, £15 12s 6d ($67.50) per ton.

The Calcutta waterworks is inquiring for 15,000 tons of riveted steel pipe. A bridge to be built at Sydney, Australia, will require 70,000 tons of structural shapes. Americans are selling British consumers a moderate tonnage of wire and skelp. Sheffield interests are inquiring in the United States for 1000 malleable iron axle boxes. British users are buying German wire rods at £6 ($25.92).

The strike of railroad workers is cutting down German production, and the Rhine market is the quietest in months. Some Germans again are seeking business abroad but so far nothing is known as to their success.

English and Scotch steelmakers have made an agreement to eliminate domestic competition by quoting plates at £10 10s ($45.36) and beams at £10 ($43.20), delivered. The plan is not believed to be practicable, as the prices quoted are above the economic level, inviting foreign competition.

Birmingham merchants are offering American plates at resale for £7 10s ($32.40), delivered. British railroads have ordered 30,000 tons of rails at £7 10s ($32.40), mill.

More Inquiry Noted in British Pig Iron Market

European Staff Correspondence

Office of THE IRON TRADE REVIEW,
Prince's Chambers, Corporation St.,

Sterling—$4.23

BIRMINGHAM, Eng., Jan. 20.—There are signs that British pig iron prices have at last become attractive, all producing districts reporting a little more activity in inquiry. The most notable development is an order for 1500 tons of pig iron obtained by the Denby Iron & Coal Co. Ltd., a firm having four blast furnaces, of which three were lighted in the fall of 1921. The order is for delivery over a period of three months. It appears to be the largest placed for pig iron in the open market for some time, most consumers having been satisfied with lots of 50 tons. Purchases of 100 tons have been regarded as large. Northampton furnaces have had several inquiries for 1000 tons recently.

Smelters in this district have not found business affected by the recent cut of 10 shillings ($2.11) in Cleveland iron, and it is admitted in the latter district that they still are being well undersold by the Derbyshire and Northamptonshire makers.

It is reported that five hematite furnaces are to be started in South Wales, which district has been buying from the Northeast Coast. It seems inevitable that Wales will soon want a great deal more pig iron.

There are practically no additions to the furnaces serving the open market, a line of business unprofitable just now. Those concerns catering to this trade have had to damp down, and scores of plants have been continuously idle since the coal strike. On the West Coast only six furnaces are in blast, but it is expected that others will be started soon. A little business is being done in that district with Scotland, the Midlands and South Wales, where low phosphorus iron is always needed.

The January ascertainment of the average selling price for west coast mixed numbers shows a large decrease. On Jan. 9 the price was certified to £5 4s 8d ($22.13) a reduction of 15 shillings 1 pence ($3.18) per ton on the previous month. This reduces miners' wages by 1 shilling 1 pence ($0.22) per shift, the reduced wage being 9 shillings 3 pence ($2.09). During the past 12 months the men's wages have been reduced 59 per cent.

Billet prices have been weakened a little by the recent Welsh reduction. Sheet bars in that area are £7 7s 6d ($31.18) making steel for delivery in the Midlands about £7 15s ($32.78). Mild steel bars can be bought at £10 ($42.30) and ⅜-inch bars at £11 ($46.53), works.

After a year's idleness the Lanarkshire steelworks at Motherwell is about to be reopened. This firm normally employs about 2500 men.

Several reports have been circulated lately of foreign inquiries for steel, particularly from Belgium. One inquiry has reached Birmingham, a large merchant has been invited to quote on some thousands of tons of billets. It appears this is to fill a foreign order which the Belgium merchant has been unable to get completed by steelworks in that country. The Birmingham merchant is likely to receive the order. Quotations from the continent have practically come to an end, as might be expected from the figures quoted in the last efforts to obtain business. With every element entering into production costing less in Great Britain, still lower prices seem to be inevitable and it is difficult to see how continental competition can be successfuul.

The most hopeless department of the British trade is that of South Staffordshire, where the works have scarcely anything to do. The Staffordshire ironmasters are now deprived of the business of steel bar rolling from foreign billets which was such a useful and profitable business in the autumn, when the big steelworks did not trouble to challenge their possession of this trade. The position is now different, the steelworks accepting orders at as low a rate as the rerollers. At the present price of billets, rerollers consider that finished bars cannot be made at a profit. Some little business is being done in the rolling of skelp, which gets its opportunity because of the maintenance of £13 10s ($57.10) as the price of iron. Steel skelp can be bought £3 ($12.69)

Current Iron and Steel Prices of Europe

British Market

Corrected to Date by Cable

Home Market Prices. Gross Tons at Works or Furnace.

	$	£ s d
SEMIFINISHED STEEL		
Billets, soft steel	29.26	6 15 0
Sheet bars	30.35	7 0 0
Wire rods	39.02	9 0 0
FINISHED STEEL		
Steel bars, England, ¾ to 3-inch	40.10	9 5 0
Ship, bridge and tank plates, England	39.02	9 0 0
Ship, bridge and tank plates, Scotland	37.93	8 15 0
Beams, England	36.85	8 10 0
Beams, Scotland	37.93	8 15 0
Sheets, black, 24 gage	48.77	11 5 0
Sheets, galvanized, 24 gage	67.74	15 12 6
Rails, 60 lbs. and over	32.52	7 10 0
Tin plate, base box, 108 lbs.	4.12	0 19 0
Steel hoops	49.86	11 10 0
PIG IRON		
Hematite, East Coast, Mixed Numbers	20.05	4 12 6
Hematite, West Coast, Mixed Numbers	22.76	5 5 0
Middlesbrough Basic	20.05	4 12 6
No. 3 Foundry, Middlesbrough	19.51	4 10 0
No. 3 Foundry, Derby, Leicester, Nottingham	18.42	4 5 0
No. 3 Foundry, Northamptonshire	17.34	4 0 0
No. 3 Foundry, Staffordshire	20.05	4 12 6
No. 3 Foundry, Scotch	22.76	5 5 0
Ferromanganese, 76 to 80 per cent	65.03	15 0 0
COKE		
Yorkshire furnace	4.12	0 19 0
Yorkshire foundry	6.51	1 10 0

French Market

Prices Last Reported

	$	Francs per metric ton (2205 lbs.)
PIG IRON		
Hematite, Lorraine	33.66	400
Basic Bessemer, Lorraine	18.83	225
Foundry, Longwy, No. 3, sand-cast	17.67	210
Foundry, Longwy, No. 3, chill-cast	18.83	225
Foundry, Longwy, No. 2, sand-cast	18.83	225
Foundry, Longwy, No. 2, chill-cast	20.58	235
Ferromanganese, 76 to 80 per cent	79.52	945
COKE		
French furnace	8.42	100
*German, Belgian and British furnace	5.47	65
French foundry	8.42	100
SEMIFINISHED STEEL		
Blooms	30.29	360
Billets	32.40	385
Sheet bars	34.50	410
FINISHED STEEL		
Steel rails	42.08	500
Merchant bars	38.71	460
Angles	39.97	475
Normal beams and profiles	39.97	475
Plates, ship and tank, 10 millimeters and thicker	55.54	660
Plates, bridge and tank, 5 to 10 millimeters	59.75	710
Sheets, black, 3 millimeters	71.53	850
Sheets, blue annealed, 2 millimeters	88.36	1050
Shafting, cold-drawn, 40 to 60 millimeters	67.32	800
Bars, 2 per cent nickel steel	117.81	1400

*F.o.b. frontier points.

All prices are f.o.b. furnace or works.

Belgian Market

Prices Last Reported

	$	Francs per metric ton (2205 lbs.)
PIG IRON		
Basic bessemer, Belgian	19.34	240
Basic open-hearth, Belgian	19.34	240
Gray forge, Belgian	20.15	250
Foundry, No. 3, Belgian	19.34	240
Foundry, No. 3, Luxemburg	18.54	230
Foundry, No. 3, Lorraine	19.34	240
SEMIFINISHED STEEL		
Blooms	31.03	385
Billets	31.03	385
Sheet bars	33.45	415
Wire rods	44.33	550
FINISHED MATERIAL		
Standard rails	39.09	485
Merchant bars	35.46	440
Normal beams and profiles	33.05	410
Plates, 5 millimeters and thicker	41.11	510
Sheets, black, 3 millimeters	42.72	530
Sheets, galvanized, 1 millimeter	126.95	1575
Plain wire	56.42	700
Galvanized wire	68.51	850
Wire nails	44.33	550

All prices are f.o.b. furnace or works.

German Market

Prices Last Reported

	$	Marks per metric ton (2205 lbs.)
PIG IRON		
Hematite, Oberhausen	19.46	3891
Foundry, No. 3, Oberhausen	16.25	3250
Bessemer Stahleisen, Siegen	17.78	3556
COKE		
Ruhr furnace coke	2.96	591
Ruhr foundry coke	3.07	614
SEMIFINISHED STEEL		
Billets	21.25	4250
Sheet bars	22.00	4400
Wire rods	22.00	4400
FINISHED STEEL		
Standard rails	25.00	5000
Merchant bars	27.50	5500
Structural shapes	29.00	5800
Ship plates	30.00	6000
Medium plates, 3 to 5 millimeters	33.50	6700
Sheets, below 3 millimeters	40.00	8000
Tin plate	95.00	19,000
Plain wire	28.50	5700
Bands and strips	40.00	8000

All prices are f.o.b. furnace or mill.

below this figure it is understood.

Business has become slow in South Wales where a little reaction has taken place, and it is feared that some of the tin plate mills may have to close. That trade has done very well in the recovery, having at the end of December 342 mills in operation, a decrease of only three as compared with the end of 1920. In the manufacture of steel sheets 102 mills were engaged, an increase of 33 in a year. Naturally the district derives much encouragement from these figures. But values are slightly lower than a week ago, being now 19 shillings 9 pence ($4.18), with 19 shillings 3 pence ($4.15) on forward account. Stocks have grown, and while Holland, France and Italy are regular customers, and business is done with the Far East, more could be handled.

Galvanized sheets are easier at £16 ($67.58) for 24-gage corrugated, and even lower prices are being accepted.

More Active Foreign Inquiry Is Noted

European Special Correspondence

MIDDLESBROUGH, Eng., Jan. 20.—Better inquiry is noted in the foreign iron and steel trade, and British exporters are viewing the situation with more hopefulness.

Sterling—$4.20

Miners' wages have fallen, and the ironworkers have agreed to suspend the sliding scale arrangement temporarily but the combined result of the reductions is now estimated to be no more than 1 shilling in the cost of producing one ton of pig iron. Iron

exporters consider this inadequate to meet the desperate conditions under which oversea trade is being carried on. The cost of coal carriage has been revised by several amalgamated railways and it is now possible to ship coal and coke at the northeast and Humber ports at easier rates. In December the cost worked out at 10 pence per ton for coal and 1 shilling 3 pence for coke. Those figures have now been reduced to 6 pence and 9 pence respectively.

Coal and coke exports from the Tyne in 1921 amounted to 2,806,767 tons, or 238,600 tons less than in 1920. There are, however, indications that 1922 will be a better year, the indications of a revival of overseas trade being more noticeable at the end of the year than at any period since the coal strike.

A more active inquiry is reported on Teesside for hematite iron, the output of which is readily absorbed and better demand is anticipated for other qualities of iron. Hematite, east coast mixed numbers is £5 ($21.00) per ton.

There was a steady increase in exports from the Tees during the closing months of 1921, yet the total was much below normal. From the port of Middlesbrough there was shipped during December 66,612 tons of pig iron, manufactured iron and steel. This represents a considerable advance when compared with July last, when the total exported was 10,200 tons. Each succeeding month since July shows a steady increase. Manufactured iron and steel exports have shown a greater expansion than pig iron. Of the former 4960 tons were shipped in July and in August 22,097, the tonnage exported increasing until November when the total was 48,407. The total for December was slightly below the November tonnage reaching 47,681 tons in December. The total steel exports for 1921 reached 326,181 tons, compared with 324,222 tons shipped in 1920.

Of the 39 oversea customers of British iron and steel makers in December India was the largest buyer, taking a total of 15,043 tons. During the same month 6292 tons went to Argentina and 5805 to New Zealand.

Pig iron exports advanced from 5420 in July to 18,931 in December. The total for the year, 1921, which was 449,362 tons, indicates the slackness of trade when compared with the 750,570 tons officially recorded as the shipment from Middlesbrough in 1920.

German Market Stagnant; Prices Easier

European Special Correspondence

DUSSELDORF, Germany, Jan. 20.—After the feverish activity of the past few months, the German iron and steel market by contrast appears utterly stagnant. Considerable business is being done but the great wave of heavy buying which culminated in November has almost completely subsided. Inland buyers are proceeding carefully and are not disposed to commit themselves beyond their day to day needs. Export orders also display a great shrinkage. Prices are easier all along the line except for fuel which may be further increased owing to the fact taxation is tending to be even heavier.

No. 3 Foundry shows a recession of 100 marks to 3250 marks ($17.55). Both semifinished and finished steel products are lower. Billets are being

Mark—$0.0054

sold at 4230 marks ($22.80); sheet bars and wire rods at 4330 marks ($23.40).

Rails are down to 5000 marks ($27); bars to 5030 marks ($27.20); shapes to 5500 marks ($29.70); with plain wire at the same figure; and bands at 8000 marks ($43.25). Opinion as to the future course of prices, however, is conflicting since in some directions costs are still increasing.

A number of blast furnaces have had to be banked on account of scarcity in coke. In the Ruhr district alone about 20 stacks are affected. This results apparently from the railroad congestion following the recent partial strike in Westphalia coupled with decreased production of coal and increased deliveries of coke to France and Belgium.

Finished steel prices are very little below world parity. The latest quotation on shapes corresponds to 1.35c per pound, compared with 1.50c Pittsburgh. Tin plate at 18,000 marks a ton is equivalent to $4.40 per box, contrasted with recent quotations of $4.00 Pittsburgh on export business, and the equivalent of $3.90 Cardiff on the Welsh product.

The labor situation is less disturbing owing to signs of slackening activity. Skilled workmen now get 18 to 20 marks (9 to 10 cents) an hour. On a gold basis this represents an increase of about 150 per cent in the past two months, and on a mark basis about 125 per cent.

New Rule Issued on Canadian Imports

Special Correspondence

TORONTO, Ont., Feb. 6.—With regard to the exportation of iron and steel materials and other commodities from the United States to Canada, the commissioner of customs and excise, Ottawa, has issued the following ruling, the information to be attached to the invoice:

"The fair market value certified on this invoice is not lower than the wholesale price of the said goods at the said time and place; and in the case of new or unused goods such fair market value is not less than the actual cost of production of similar goods at said time and place, plus a reasonable profit thereon."

For those who do not furnish the required information the ruling instructs:

"Collectors and customs to appraise the importation at not less than the values quoted by American trade papers, plus 10 per cent, with the application of sales tax, ad valorem, duty where applicable and dumping duty on that basis."

No. 1 foundry (2.25 to 2.75 silicon) is quoted $27.15; malleable, $27.15, and No. 2 foundry, (1.75 to 2.25 silicon), $26.15, Toronto. No. 1 foundry and malleable are $29.80; and No. 2 foundry is $28.80, Montreal.

The Britannia Mining & Smelting Co., Britannia Beach, B. C., has awarded a contract for approximately 1300 tons of steel to the Canadian North West Steel Co., Vancouver, B. C., for an ore concentrating plant. Shapes and beams are quoted at 2.35c, Toronto.

The Collingwood Shipbuilding Co., Collingwood, Ont., has received a contract from the National Sand & Material Co., Ltd., for the construction of a 3500-ton sand and gravel carrier for which a tonnage of plates will be required. Plates are quoted at 2.20c, Toronto. No. 28 black sheets are offered at 4.00c, and No. 28 galvanized at 5.10c, Toronto.

Farmer Regaining Buying Power

Wheat and Other Agricultural Products Advance as Implements Decline—Other Factors of Cheer in Situation Are Stronger Securities Markets and Rising Foreign Exchanges—Arms Conference Helps Sentiment

BY JOHN W. HILL, FINANCIAL EDITOR

THE present business and financial situation has three overshadowing phases of encouragement. One is the strength of the security markets, the other is the upward tendency of foreign exchanges, and the third is the rise of wheat and corn and the general enhancement of the farmers' purchasing power, save in the cotton sections. The upturn in stocks has extended for the first time in some weeks to the rail shares. The movement is taken to indicate that the stock market is discounting a spring trade recovery, which will favorably affect the railroads as well as general business. Already railroad freight traffic, as depicted in the BUSINESS TREND SECTION is showing substantial improvement and preliminary reports on December railroad earnings forecast a total for that month unexpectedly large. The investment market still is presenting a strong front in the face of large new flotations.

The continued advance of European exchange rates, save those for Central Europe, constitutes one of the most significant and encouraging developments of many months. Business observers long have recognized that one of the most serious causes of worldwide depression was the extreme economic distress flowing from the Great War. The degree and intensity of that distress has been measured by the fluctuations in the mercurial and sensitive exchange rates. Since autumn they have been rising and now there exists no longer any doubt but that Europe is on the upgrade economically. Many perplexing problems involving reparations, armaments, national budgets, paper inflation and commercial arrangements, remain to be solved. That will be the task confronting the Genoa conference.

The higher exchanges directly reflect the reduction in the adverse balance of trade against England and France. They also take into account the tremendous significance of the Washington arms conference which has just been concluded. The economic effects of the great victory for peace won at this meeting will gather momentum as time goes on. The passage of the foreign debt bill has been another factor in stabilizing exchanges. While this bill as passed by the congress was unsatisfactory to the administration because of its provisions for 25-year maturity and 4½ per cent interest minimum, it nevertheless has removed much of the uncertainty regarding the disposal of the debts.

Curtailed purchasing power of the farmers has been a most serious drag upon general business. It has created widespread discontent in the agricultural sections and given rise to many impossible demands for government inflation to boost farm product values. Fortunately, however, the recent farm conference at Washington did not adopt the most radical of the views advanced by loose economic thinkers in the ranks. Conservative recommendations prevailed. Now the situation has taken a new turn. Wheat has been steadily climbing and is now 25 per cent above the low point. Oats have gained 30 per cent, hogs 35 per cent and sheep 100 per cent. Even corn, of which there is a great surplus, is stronger, and wool remains firm. In fact, everything the farmer sells, save cotton, is on the upgrade. On the other hand the necessaries which he must buy are receding. Automobiles have been sharply cut and the International Harvester Co. has announced important reductions of implement prices to meet competition. It is true that the farmer will not benefit from the higher prices to the extent he would had they appeared some months ago, but the influence upon sentiment will be salutary and practical benefits will not be lacking. Trade reports do not reflect improved buying among farmers as yet, but many signs point to the probability that the present acute disparity between farm and other prices will be largely wiped out within the next 12 months.

Higher wheat prices have resulted from stronger foreign exchanges and from the depleted state of wheat stocks. Europe has purchased nearly all of this country's surplus supplies, what remains being only sufficient for domestic needs. This forecasts still higher quotations and will be reflected in improved sentiment on the farms.

The Barometer of Business

WEEKLY COMPARISON

	Last Week	Week Before	One Month Ago	One year Ago	1913
Business failures	629	605	471	450	440
Cash ratio Federal Reserve system, per cent.	76.2	77.2	71.1	49	....
Loan rate 4 to 6 months, New York, per cent...	4¾-5	4¾-5	4¾-5	7¾-8	4½-4¾
Bank clearings (000 omitted)	$7,146,146	$6,069,020	$7,669,072	$7,795,927	$4,500,000
Average 20 industrial stocks	$79.39	$77.79	$76.06	$73.22	$83.50
Average 40 bonds	$76.74	$76.37	$75.25	$70.47	$93.00
Car loadings (week ended Jan. 21)	738,275	720,877	727,003	703,115	612,576

MONTHLY COMPARISON

	December	One month Before	One Year Ago	1913
Building awards 27 states.	$198,518,000	$192,311,000	$100,145,000	*$71,450,000
Business failures:				
Number	**2723	2444	1895	*1336
Liabilities	**$73,795,790	$87,502,382	$58,871,539	*$22,723,000
Excess of exports	$59,100,000	$84,200,000	$454,229,331	*$54,406,000
Excess of gold imports	$29,734,000	$51,329,367	$27,602,201	†$630,716
Bureau of Labor Wholesale Price Index	149	149	189	100
Bradstreet's Index of Wholesale Prices	123.2	122.8	137.5	100
Economist's Index of British Prices	**4284	4357	5617	2732
National Industrial Conference board's Cost of Living Index	162.7	163	190	100
New incorporations	$618,592,300	$367,956,100	$860,803,400	$172,301,000
Railroad net earnings	x$67,000,000	$105,000,000	$54,344,000	$59,900,000

*Monthly average. †Monthly average export excess. $1918. x November.
**January

FOREIGN EXCHANGE (Demand)

	Normal	Last Week (closed)	Week Before	One Month Ago	One Year Ago
Sterling	$4.86	$4.32	$4.24	$4.21	$3.82
Francs	19.3c	8.37c	8.19c	8.12c	7.00c
Lira	19.3c	4.68c	4.46c	4.30c	3.62c
Marks	23.8c	0.50c	0.50c	0.50c	1.59c

The Trend of Business

WHAT THE IRON TRADE REVIEW CHARTS TELL

GENERAL SITUATION: Commerce and industry slowly emerging from midwinter lull. Manufacturing and merchandising conditions still spotty but inclining upward as spring approaches. More buying in industrial than in agricultural centers.

INDUSTRIAL ACTIVITY: Iron and steel active capacity increased; coal and coke gain; copper slightly better.

TRAFFIC: Railway freight movement expanding.

CREDIT SITUATION: Federal reserve system continues to strengthen. Loan rates low and bank credits plentiful.

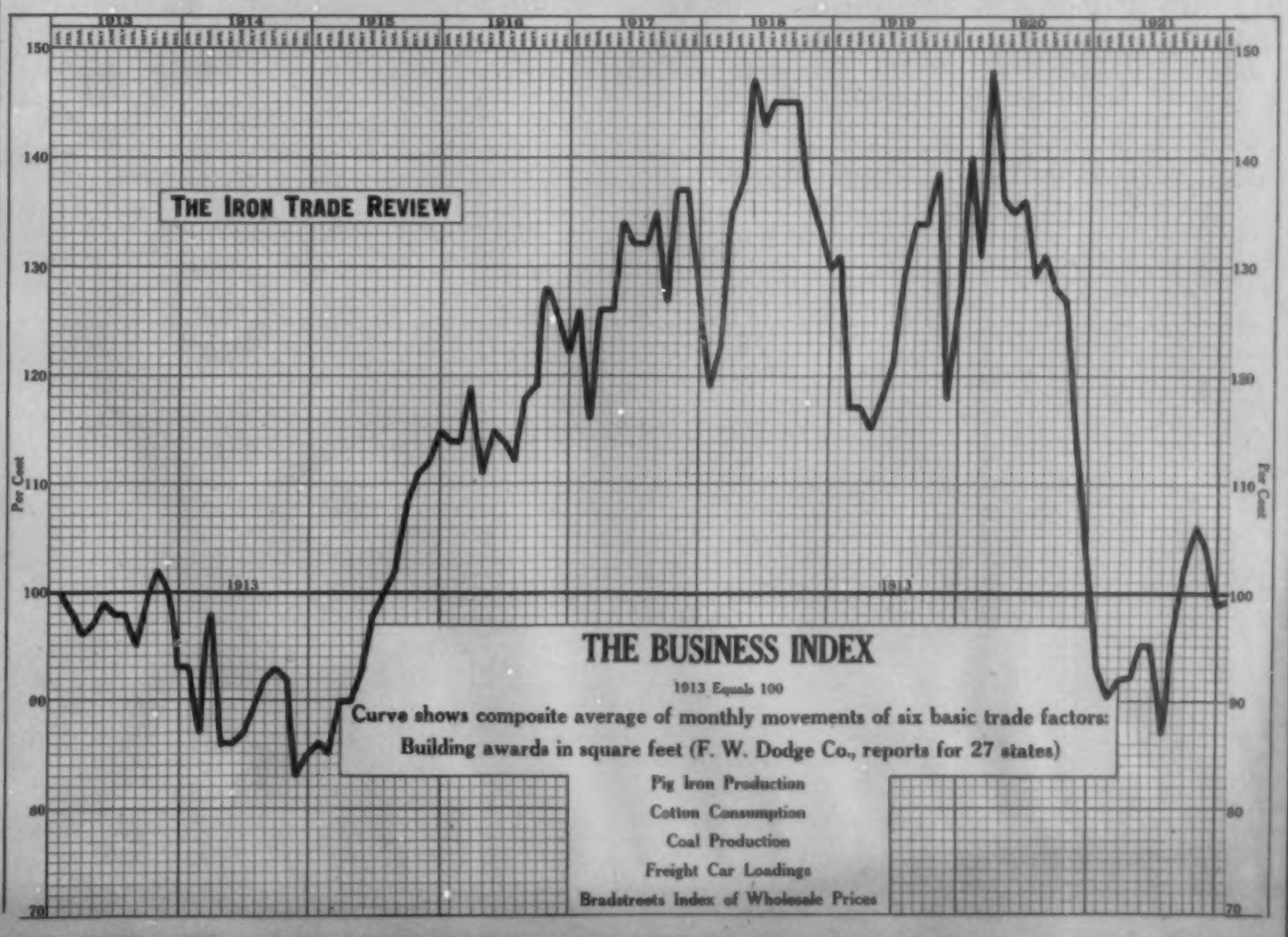
BUILDING CONSTRUCTION: Volume of contracts rising.

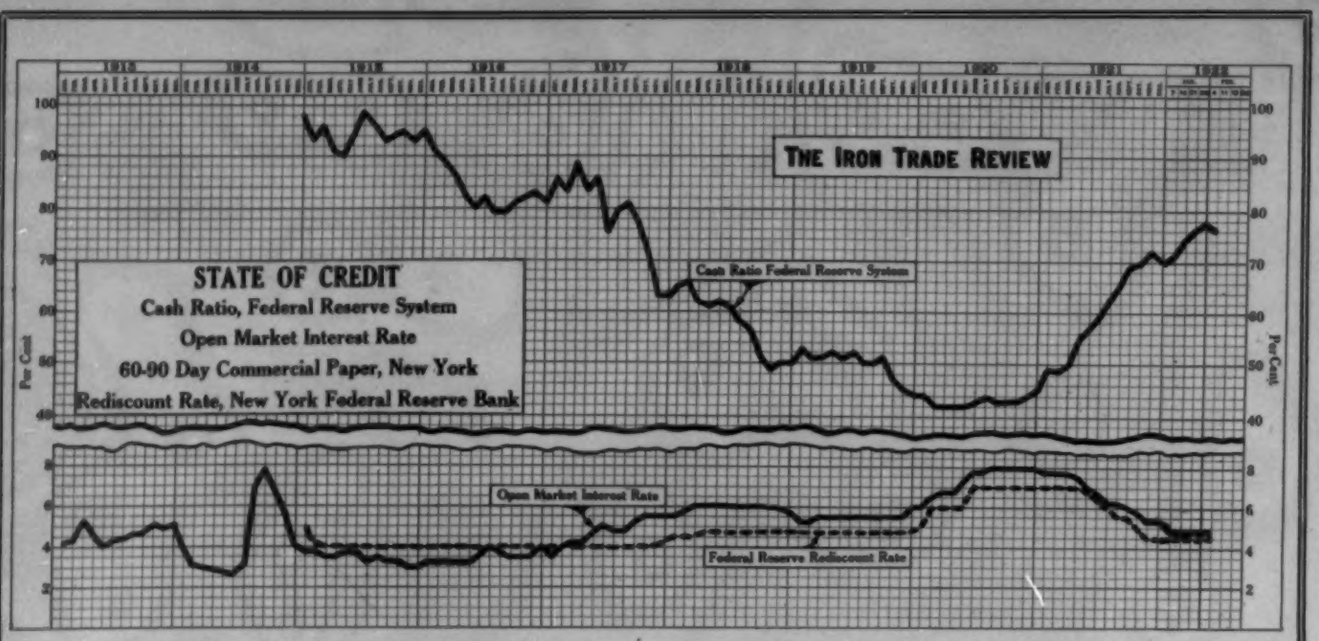
LABOR: Unemployment decreasing slightly; further wage revisions imminent.

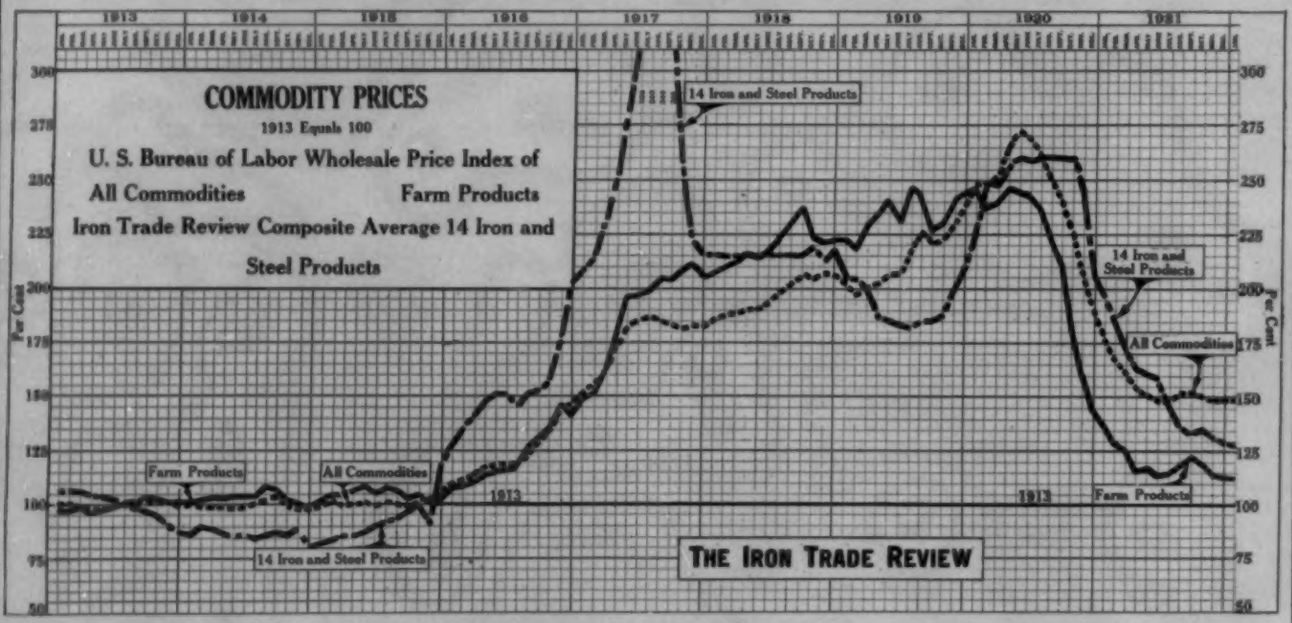
FOREIGN TRADE: Rising exchanges reflect growing European economic strength.

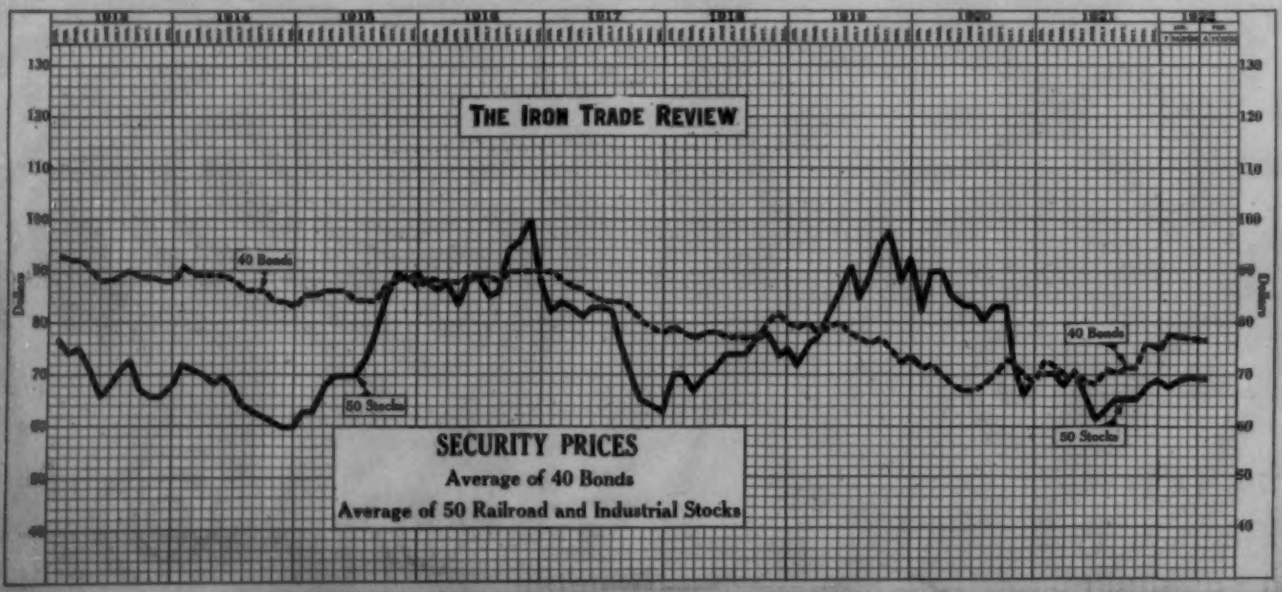
SECURITY PRICES: Average of 50 representative stocks tending higher. This indicates discounting of some trade recovery. Bond average drifting.

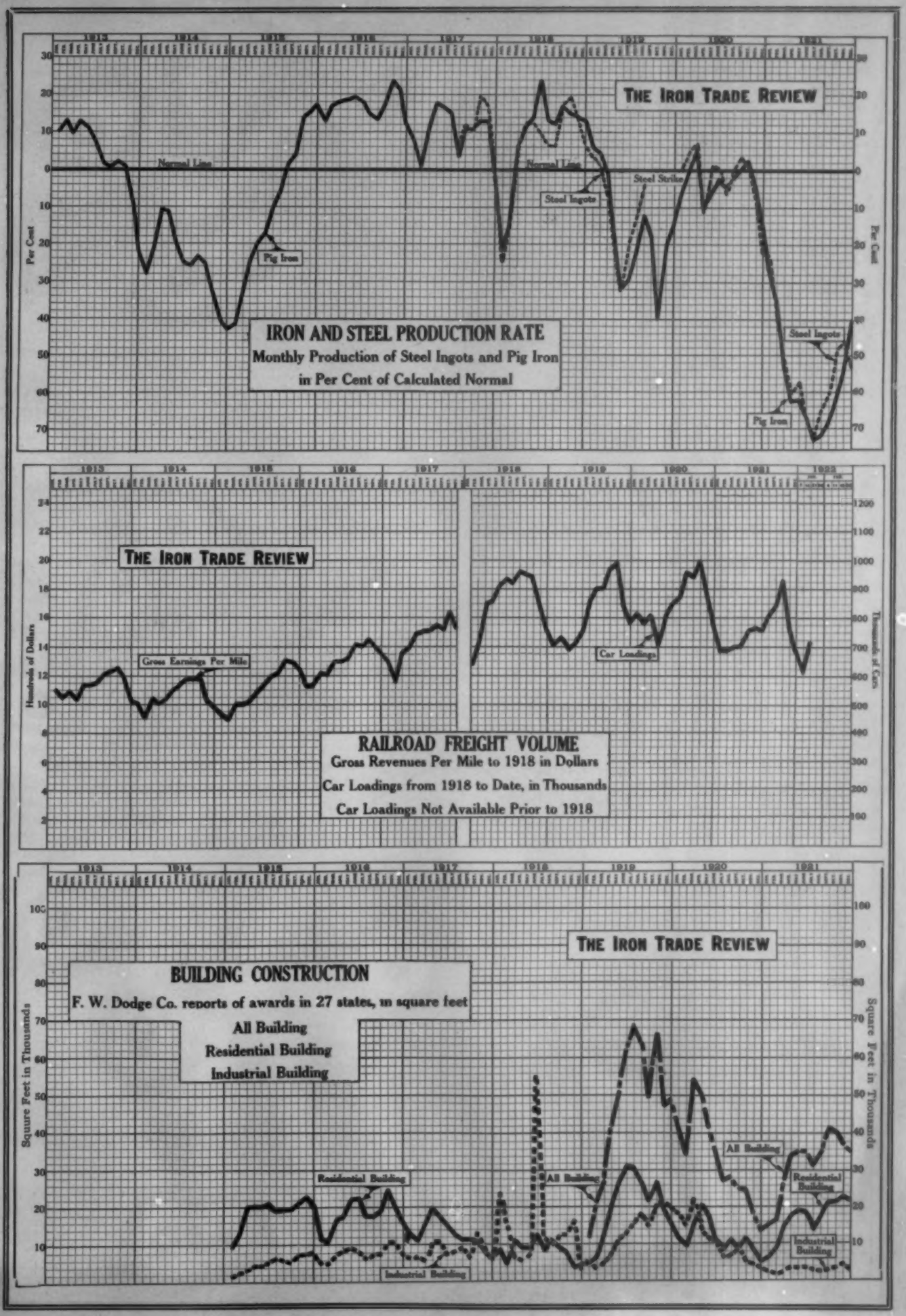
COMMODITY PRICES: Line of average commodity prices stabilizing; some seasonal weakness in certain lines. Higher wheat offers hope to farmers.

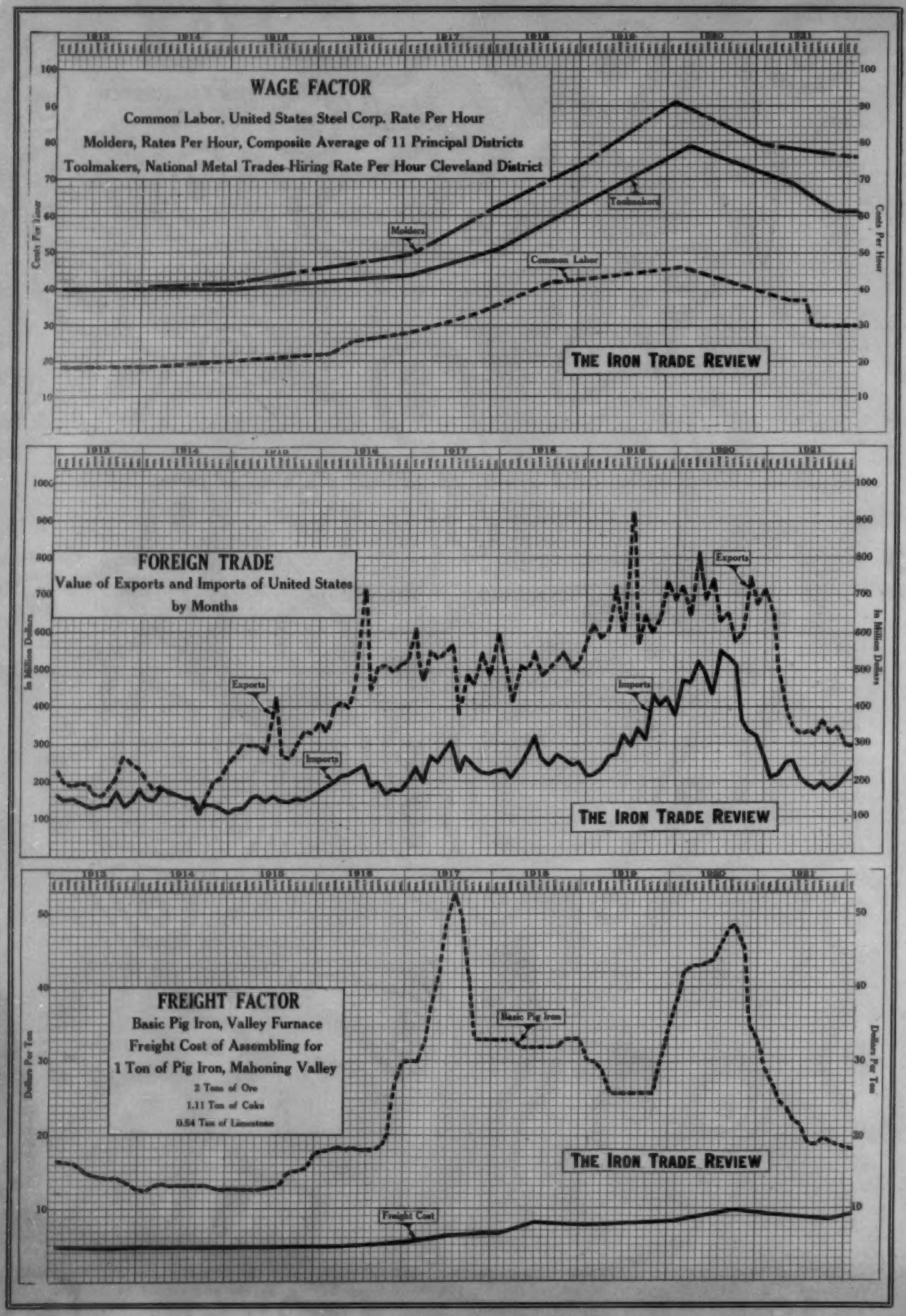



THE IRON TRADE REVIEW
STATE OF CREDIT
Cash Ratio, Federal Reserve System
Open Market Interest Rate
60-90 Day Commercial Paper, New York
Rediscount Rate, New York Federal Reserve Bank
Cash Ratio Federal Reserve System
Open Market Interest Rate
Federal Reserve Rediscount Rate
Per Cent


COMMODITY PRICES
1913 Equals 100
U. S. Bureau of Labor Wholesale Price Index of
All Commodities Farm Products
Iron Trade Review Composite Average 14 Iron and
Steel Products
14 Iron and Steel Products
Farm Products
All Commodities
14 Iron and Steel Products
1913
THE IRON TRADE REVIEW
Per Cent


THE IRON TRADE REVIEW
40 Bonds
50 Stocks
SECURITY PRICES
Average of 40 Bonds
Average of 50 Railroad and Industrial Stocks
Dollars


THE IRON TRADE REVIEW
IRON AND STEEL PRODUCTION RATE
Monthly Production of Steel Ingots and Pig Iron
in Per Cent of Calculated Normal
Normal Line
Pig Iron
Steel Ingots
Steel Strike
Per Cent
THE IRON TRADE REVIEW
RAILROAD FREIGHT VOLUME
Gross Revenues Per Mile to 1918 in Dollars
Car Loadings from 1918 to Date, in Thousands
Car Loadings Not Available Prior to 1918
Gross Earnings Per Mile
Car Loadings
Hundreds of Dollars
Thousands of Cars
THE IRON TRADE REVIEW
BUILDING CONSTRUCTION
F. W. Dodge Co. reports of awards in 27 states, in square feet
All Building
Residential Building
Industrial Building
Square Feet in Thousands
1913
1914
1915
1916
1917
1918
1919
1920
1921
1922


WAGE FACTOR
Common Labor, United States Steel Corp. Rate Per Hour
Molders, Rates Per Hour, Composite Average of 11 Principal Districts
Toolmakers, National Metal Trades Hiring Rate Per Hour Cleveland District
Molders
Toolmakers
Common Labor
Cents Per Hour
THE IRON TRADE REVIEW
FOREIGN TRADE
Value of Exports and Imports of United States
by Months
Exports
Imports
In Million Dollars
THE IRON TRADE REVIEW
FREIGHT FACTOR
Basic Pig Iron, Valley Furnace
Freight Cost of Assembling for
1 Ton of Pig Iron, Mahoning Valley
2 Tons of Ore
1.11 Ton of Coke
0.54 Ton of Limestone
Basic Pig Iron
Freight Cost
Dollars Per Ton
THE IRON TRADE REVIEW

Directory of Manufacturers

Hendricks Commercial Register of the United States; cloth; 2324 pages, 8½ x 11½; published by S. E. Hendricks Co., Inc., and for sale by THE IRON TRADE REVIEW; price $12.50 in the United States, and $15.00 in foreign countries, postpaid.

The 1922 edition of this book differs from those of previous years in that the size has been changed in the interest of readability. The new type size is 7 x 10 inches and more space has been allowed between lines and columns. In spite of the fact that the enlarged page accommodates 25 per cent more subject matter, the number of pages has not been decreased proportionately.

As in former editions, the book covers a wide range of industries and lists the manufacturers of equipment under many headings, including electrical, engineering, machinery, building, manufacturing, chemical, hardware, iron and steel, railroads, mining, quarrying, architectural, etc. Dealers, manufacturers, producers, and consumers are registered. At least 100,000 names of individuals and companies are classified by trades or products, and are indexed and cross indexed. A separate section furnishes references to distinctive products, listed by trade names or special brands. In another section the names of manufacturers are arranged alphabetically and their addresses and principal products are given.

Primarily the book is intended to be a guide for buyers and sellers and to this end the descriptive information of products and services is expected to assist in locating the sources of and outlets for finished materials.

* * *

Electric Melting Practice

The Electric Furnace, by Frank J. Moffett; cloth; 118 pages, 4 x 6¼ inches; published by Sir Isaac Pitman & Sons, Ltd., and for sale by THE IRON TRADE REVIEW; price $0.85, postpaid.

Descriptions of practically all types of electric furnaces are given in this book which is of convenient pocket size. The fundamental technology of electric heating is treated from the electrical and metallurgical viewpoints. Some of the principal subjects discussed are electrical units and power, conversion of electrical energy into heat, hydraulic analogy, and alternating, two and three phase currents. A chapter is devoted to the history of the electric furnace, the work of Pepys, Siemens, Moissan and others being reviewed. The characteristics of arc and induction furnaces for steel and iron, the fixation of nitrogen, and the materials used in furnace construction are discussed. The qualities required in electric furnace linings, including ability to withstand high temperatures, resist chemical action, retain mechanical strength and density, and maintain shape in spite of alterations in temperature are emphasized in an interesting chapter. The text is accompanied by 33 illustrations and five tables containing technical data. A short bibliography also is presented.

* * *

Welding Practice

Electric Welding, by H. S. Marquand; cloth; 204 pages, 5½ x 8¼ inches; published by Benn Bros., Ltd., and for sale by THE IRON TRADE REVIEW; price $3.00, postpaid.

"Practical welding," says the author of *Electric Welding,* "has its own particular field of value, and each process has its defined legitimate application, its defects and its advantges."

At the outset, Mr. Marquand defines soft soldering, brazing, thermit welding, riveting, autogenous welding and electric welding. The properties of metals are considered from the standpoint of their adaptability to various welding processes, the melting points, oxidation, expansion and contraction and mechanical properties of welds being discussed. In dealing with electric welding the author gives a general survey of the La Grange Hoho, Zerener, Thomson and resistance welding processes. Spot, seam and butt welding methods are explained. An entire chapter is devoted to arc welding systems, equipment and machinery. Some of the topics covered in succeeding chapters are generating machinery, electrodes and holders, protective coverings, preparations for arc welding, chemical and physical properties of metals and their influence on welding, applications of electric arc welding, testing and strength of welds, and general considerations in arc welding.

Among the last pages is a bibliography of technical papers on welding. More than 90 illustrations, many of them a full page in size, supplement the text. Cross-section drawings and curves showing various rates of cutting cast iron and other material have been plotted and reproduced in the book. Tabular information, including melting points of the principal metals and their alloys, current advised for various sizes of electrodes, speed of welding for different thicknesses of metal, piecework prices paid for welding, feet of weld per unit of power and approximate cost, mechanical tests on welded plates, elastic limits, power consumption, etc., is presented.

General Electric Invites Investigation

The General Electric Co. through counsel, Charles W. Appleton, has written to Harry M. Daugherty, United States attorney general, and to Charles D. Newton, attorney general of New York, inviting state and federal investigations of the company, if in their opinion testimony before the Lockwood committee sitting in New York city indicated that the law had been violated.

On being advised of this communication, Samuel Untermyer, counsel for the committee, said he had notified officers of the company that the department of justice would be asked to prosecute violations of the law. He said the company was an "intolerable monopoly and should be suppressed."

Forming Gears by Hot Rolling

Independent Application of Power to Die Roll and Gear Blank and Synchronization of Their Rotation Are Factors Contributing to Success of Gear Rolling Process—Oscillation Kneads Metal

BY REGINALD TRAUTSCHOLD

FOR many years the need for the cheap and rapid production of gears has attracted the attention of engineers and machine toolbuilders. Generating machines have been improved steadily and production has been increased greatly by recent developments. However in spite of the fact that most of the effort has been directed toward improvements in gear cutting, a number of investigators have held steadfastly to the hope that gears might be successfully rolled to the proper shape.

The possibility of hot rolling gears has been recognized for at least half a century. As early as 1872 John Comley attempted to roll gears from heated blanks by a knurling process. His basic idea was sound, as gears produced by a true rolling process would theoretically be perfectly smooth, and the true rolling motion so essential to maximum efficiency would be reproduced by any pair of gears so rolled. However, his experiments were unsuccessful, as were subsequent attempts by others to produce gears by the same or similar methods. In each case failure was due to the fact that but one of the functioning shafts of the apparatus used was positively driven, the rotation of the die being dependent on that of the blank or vice versa. The inevitable slip between the die roll and the blank with such an arrangement, resulted in serious distortion of the rolled teeth and inaccuracy of the tooth spacing.

Although Comley should receive the credit for the orignal idea on which the process now perfected is based, nothing practical was accomplished until almost 40 years after his first experiments were performed. In 1910 H. N. Anderson conceived the idea of positively actuating both of the functioning shafts of a gear rolling machine and accurately synchronizing their rotations by means of independent timing gears. By this improvement the destructive slippage between die roll and blank was eliminated and distortion of the molded teeth and inaccuracy of tooth spacing prevented. Although Mr. Anderson's original purpose in developing his first machine was merely to replace the preliminary gashing operation in the prevalent method of gear cutting and then to complete the formation f the gears by grinding, the situation which developed was similar to that which occurred in the development of the modern gear hobber. In eacn case a machine, designed primarily to perform only a preliminary operation, so conclusively demonstrated on test the soundness of the basic principle involved as to necessitate only some slight refinement of the machine to obtain sucessful practical performance of the entire process without further finishing operations. The first machine, in fact, produced gears so perfectly formed as to require no additional operations on the teeth an accomplishment which won for Mr. Anderson the award of the John Scott legacy medal by the Franklin institute in 1915.

With some few modifications of the original machine, the problem of the ultimate perfection of the process of rolling gears resolved itself into a question of developing a system of gearing, permitting the use of dies which could be produced with a high degree of precision at a reasonable cost and which could be redressed when necessary without affecting the precision of contour or dimensions of the molded gears. The accomplishment of this and of the next step necessary—the adaption of this system of die rolls for use in a machine operating on the principle evolved—has made possible the practical commercial realization of the hopes of Comley and others.

The high cost of producing extremely accurate die rolls made it a primary necessity to devise a form of tooth for these dies which would effect the highest degree of precision and the lowest possible cost in both original production and in redressing. A solution for this

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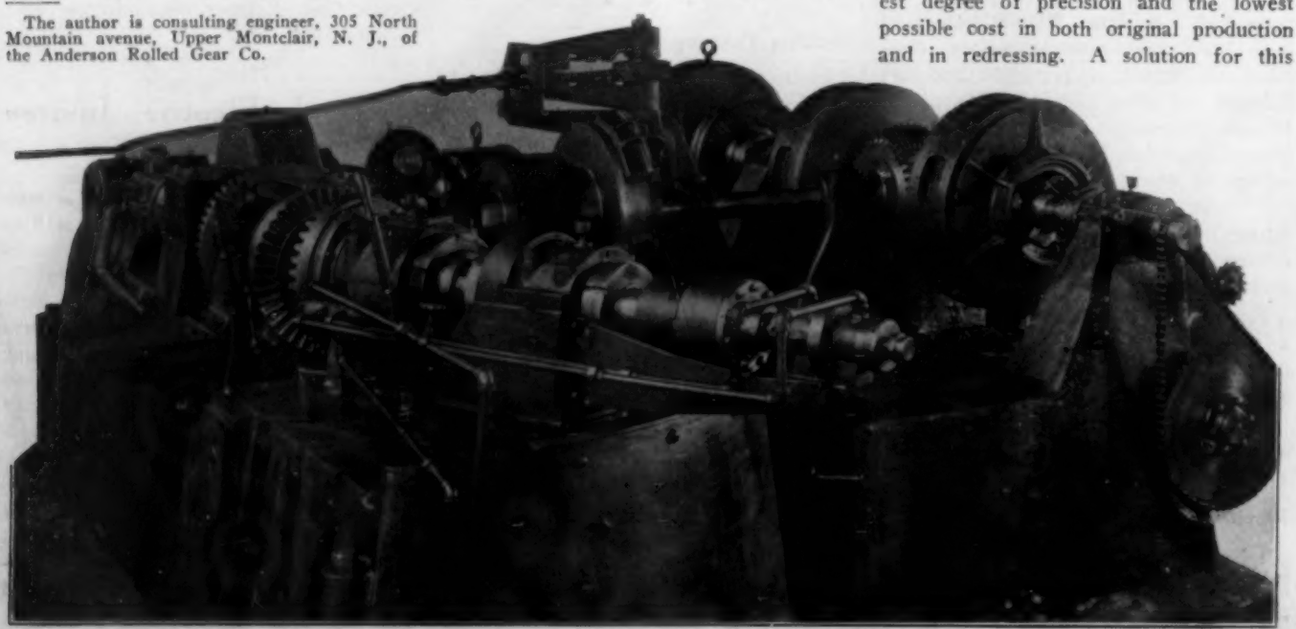


FIG. 1—FRONT AND SIDE VIEWS OF MACHINE FOR HOT ROLLING BEVEL RING GEARS

problem was found in the plane-sided tooth of the standard involute rack and in the plane-sided radial tooth of the standard crown gear for rolling spur and bevel types of gearing, respectively. In the case of the latter, the dies have been similar to those of standard crown or flat bevel gears with practically no modification, while for rolling gears of the spur type the plane tooth of the standard rack is adopted for the die roll irrespective of its size or number of teeth. For the actual rolling, the blank, heated to a temperature of from 2000 to 2100 degrees Fahr. is placed on the work arbor of the machine and securely clamped in place by means of a powerful mechanical, pneumatic or hydraulic chuck. As the rolling commences, the die, which is clear of the blank at the start, advances slowly until its teeth eventually reach the point of full penetration in the blank. This advancement of the dies is produced and controlled by a cam mechanism, designed to effect a regular constant progression up to nearly the point of full engagement and then a somewhat slower progression until the die roll and the molded gear are fully in mesh. The action of the cam is timed so as to attain full penetration of the die roll teeth just before the heated blank has cooled to its critical temperature and then to permit continued rolling with no advancement of the die until the temperature is slightly below this point.

The independent application of the power to both die roll and blank and the accurate synchronization of their rotations effect radical penetration of the die teeth at exactly the same points on each revolution, eliminating any possibility of tooth distortion in the finished product.

Machines for the production of extremely accurate gears are equipped with a control which frequently and automatically reverses the rotation of the die roll and blank. This frequent reversal or oscillation is continued during the greater part of the forming operation until the die has reached a point within 0.01 inch of full penetration, when the action automatically reverts to direct rolling for finishing. The oscillation tends to displace and build up the metal of the blank somewhat more symmetrically on both sides of the teeth than if direct rolling were maintained throughout the process.

During the rolling operation the die roll is cooled by a stream of water directed against its face at the point farthest from that of contact with the blank. This cooling, together with the extremely short duration of the actual rolling, prevents the temperature of the die roll rising above that easily bearable to the hand and minimizes the chance of burning the die. The chilling action of the cool wet die roll in contact with the hot blank accelerates the contraction of the blank and consequently loosens the forging scale as it is formed, so that the scale is thrown free by the centrifugal force resulting from the high speed of operation. The rolling is continued until after the blank has cooled below its critical temperature, or in other words until after the formation of forging scale has ceased. Therefore the finished gears are free from scale and the molded teeth are unmarred by scale blemishes. They also are highly polished on all contact surfaces.

When the gears are removed from the rolling machine no further operations are necessary except boring and facing the hubs and turning off the web or burr from the ends of the teeth. These operations can be performed semi-automatically by chucking the gear on the rolled teeth to assure accurate centering.

The rolling of the blank under a pressure of from 10 to 20 tons and the thorough kneading effect of the die teeth, build up and compress the metal into the formed teeth and also gradually break up the coarser crystalline structure of the metal, producing a dense, thoroughly worked down structure. The minute metallic crystals are rearranged in a trussed formation following the periphery of the gear teeth, tying these teeth to the body and equalizing the internal structure strains in the metal. This elimination of structural strains is so complete as to prevent distortion in subsequent heat treatment of the gears. It has even been found unnecessary to use any clamps to hold the gear true when quenching. The modification and refining of the metallic structure imparts to the finished product great strength and valuable hardness and wearing qualities. Laboratory tests, confirmed by service tests under severe operating conditions showed hot rolled gears in normal condition to have a yield of 7918 pounds, an ultimate strength of 13,645 pounds, and a hardness of 26. Case hardened, hot rolled gears showed a yield point of 14,750 pounds, an ultimate strength of 19,130 pounds and a hardness of 85, the case penetrating to a depth of 0.035-inch.

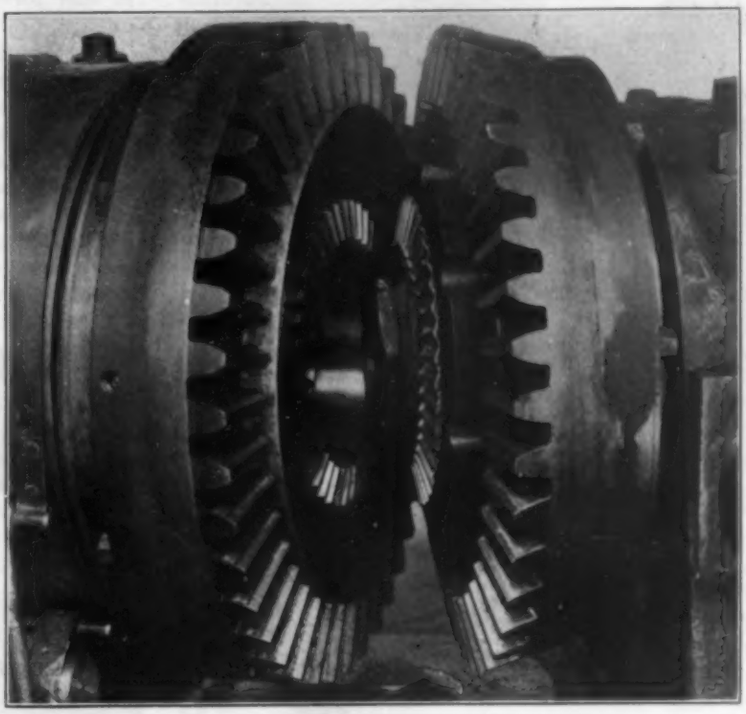


FIG. 2—ROLL DIE, BEVEL GEAR BLANK AND TIMING GEARS OF MACHINE SHOWN IN FIG. 1

As die rolls are somewhat narrower than the blanks used, the gears on the completion of the rolling are either partially or wholly shrouded, which makes possible an increase in the strength of a single gear or of a pair or train. The weaker member of a pair can be strengthened by leaving on all or a part of the shroud, or the shrouds of two gears may be so proportioned as to equallize their strength and increase that of the combination.

Perhaps the greatest advantage of the rolling process lies in the saving in material, labor, overhead, and equipment investment, made possible by the method of producing the gears. As the formation of the teeth on the molded

FIG. 3—BLANKS FOR BEVEL RING GEAR AND PINION

gear is accomplished by displacement and not by the removal of metal, the blanks may be proportioned so as to necessitate removal of waste metal only in finishing the hubs and turning off the shrouds.

The actual time of rolling a gear does not exceed 15 seconds. Considering this and the additional fact that the largest size machine so far developed can be readily operated by one man, with a helper to heat the blanks and feed the machine, and that both of these jobs can be handled by men of only fair intelligence under a competent foreman, it is apparent that the labor cost is extremely low. It is possible to attain and maintain a production rate of 80 or 90 gears per hour on the rolling machine.

Although the cost of a single rolling machine is somewhat high, nevertheless the rapid rate of production makes possible a comparatively low equipment investment for a given rate of production. Assuming a required daily production of 700 bevel ring gears, 700 bevel pinions, 700 miter bevel gears and 1400 spur gears, the total equipment cost for the hot rolling process is approximately $234,000. The tooth forming equipment alone, including the necessary furnaces and rolling machines represents an outlay of slightly more than $90,000.

The standard form of spur or bevel gears dies may be readily adapted for the rolling of spiral, helical or herringbone gears of either type, the bevel herringbone gear being one that cannot be produced by any other method. For spiral or helical gears, oblique straight cuts across the face form the tooth spaces of the dies, producing tooth in the center than at the sides and therefore, molded teeth which are correspondingly shorter and thicker at the ends than in the center. This result, so far from being a disadvantage, actually effects greater tooth strength than if the teeth were of uniform dimensions, due in part to the fact that the greater central depth gives a longer arc of contact at the center of the face of the gear. Herringbone gears may be produced by the simple expedient of bolting together in accurate alignment two helical gear dies of opposite spiral angle, of either the spur or the bevel type. These dies, securely keyed and fastened together for use, may be readily taken apart for separate redressing of the two halves. As stated above, it has never before been possible to produce commercially a bevel herringbone gear and it is quite conceivable that this type may prove to be of even greater value in the mechanic arts than the herringbone gear of the spur type.

The development and perfection of the hot rolling process for gear production also increases the range in sizes and and variety of bevel gearing, which formerly has been restricted by a limited series of arbitrarily established standard pitches. This adherence to so-called standard pitches has necessarily limited the number of sizes of gears of any given number of teeth, as the pitch has definitely fixed the diameters of gears of any desired ratio. In other words, the number of teeth and pitch being determined, no variation in size was obtainable, which necessitated other parts of any machine being so designed as to fit these arbitrarily standardized gears. It is of course far more logical to determine the most advantageous design and proportions for the machine as a whole and then make gearing of the desired ratio and of dimensions to fit the machine. The dies for hot rolling machines can be designed to adhere to standard pitches or can be designed, by allowing sufficient variation in pitch, to permit the rolling of gearing of any desired diameter with any desired number of teeth. This is the more readily possible due to the increased strength of the rolled teeth which nullifies any objection to slight variations in pitch, especially for large quantity production of gears of specific sizes.

FIG. 4—ROLLED BEVEL RING GEAR AND PINION BLANKS

An advantage of permitting this modification is that it makes it possible to use a simple crown type die roll for any size or shape of bevel gear. Where strict adherence to pitch standards is required this is seldom possible, since the diameter of the crown die roll is determined by the length of the conical element of the gear to be rolled and this is seldom commensurable to the desired pitch. Consequently it is generally necessary, when rolling gears of established pitch, to use a die roll of a flat bevel type, thereby shortening the pitch diameter of the die until commensurable with that of the rolled gear when at its critical temperature.

Considering the fact that the actual rolling is done at the forging temperature of the blank with but little rise in the temperature of the die, it is necessary to take account of the shrinkage of the finished gear. The shrinkage can

be determined only empirically but the laws governing the expansion of metals under variations of temperature and the coefficients of expansion have been so definitely established, that this allowance can be made with a high degree of precision. Dies accurately designed in accordance with the above should produce about 500 gears with an ample degree of accuracy before redressing becomes necessary.

Redressing of Die Rolls

All types and sizes of die rolls having the standard plane-sided teeth can be redressed whenever wear or dulling make it necessary. Theoretically in the case of spur dies this redressing would introduce inaccuracies in the molded gears, due to slight reduction in the diameter of the die. Actually, however, this effect can be counteracted. As the speed of rotation of the shafts on which the die roll and blank are mounted, is controlled by accurate timing gears, synchronizing the rotation of the two, the angular distance between the molded teeth is maintained absolutely uniform. The only effect, therefore, of the reduction of the die roll diameter is the introduction of a slight creep which does not appreciably affect the curvature of the teeth formed. It is only necessary, consequently, to maintain constant the width of the die tooth spaces. If this is done, the amount of creep introduced by a quite appreciable reduction in the diameter of the die roll can be accommodated without distortion or malformation of the rolled teeth.

The machinery and equipment required for the new plant of the Automatic Electric Machine Co., Inc., 567 Pacific building, San Francisco, has been purchased and is being installed. Operations will begin March 1.

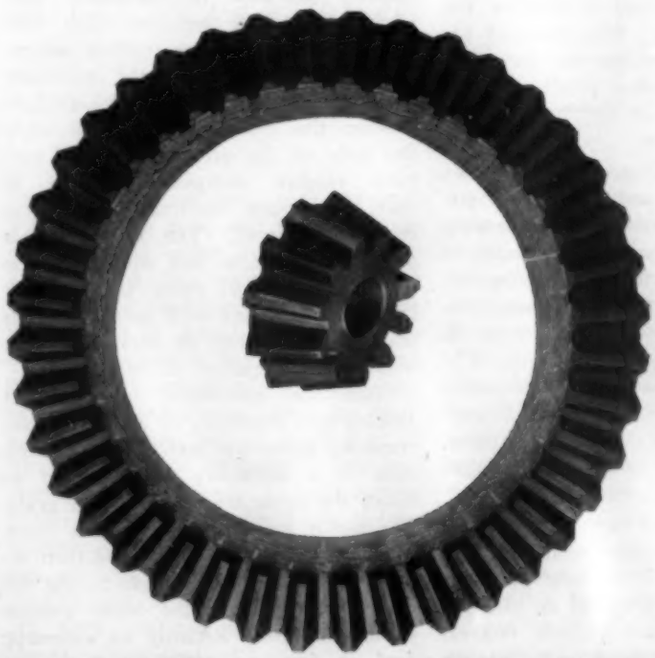


FIG. 5—FINISHED BEVEL RING GEAR AND PINION

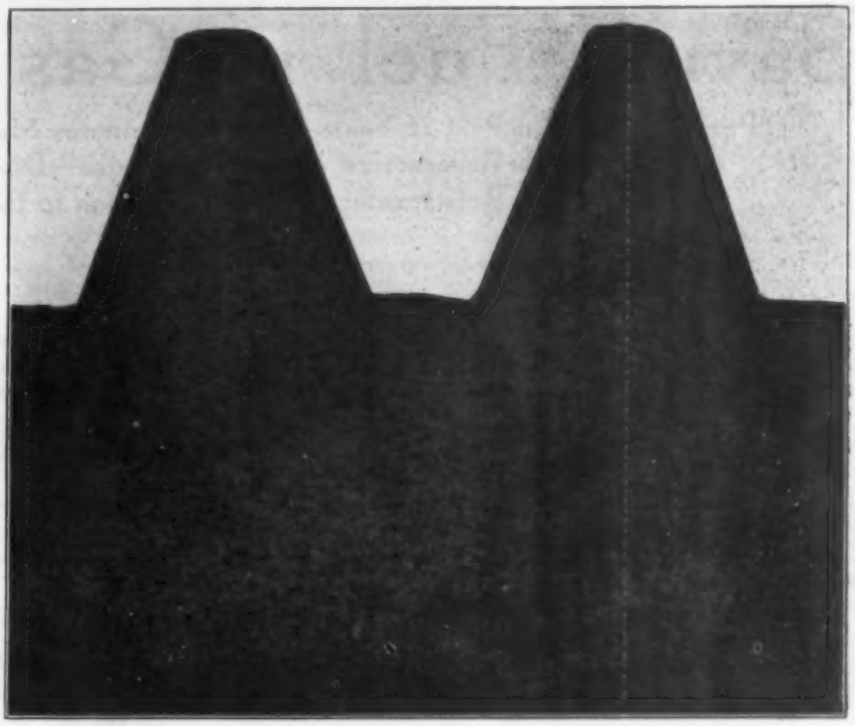


FIG. 6—CROSS SECTION OF ROLLED BEVEL GEAR TEETH SHOWING STRUCTURE OF METAL

Makes Improvements in Surface Condensers

Elimination of waste tubes, maintenance of uniformly high condensate temperature, counter-current air cooling, and retardation of fouling and corrosion are among the improvements, made by the Ingersoll-Rand Co., 11 Broadway, New York on its condensers. Elimination of waste is secured by arranging the tubes in stages in correct shell shape and by using a sperate devaporizor or cooler. The tubes, spaced on wide centers in the top of the shell, are brought closer together in each lower bank or stage. Sufficiently high steam velocities to sweep condensate and the tubes are maintained throughout the condenser. Residual air and steam from the last row of tubes is drawn up into the cooler which is mounted on the side of the shell proper and fitted with cast iron cooling grids whose surfaces are particularly adapted to devaporize and cool the air before it passes to the vacuum pump.

Withdrawal of the noncondensibles at the bottom of the shell and the use of a multistage tube arrangement together with the new shell shape insure an active flow of steam over every tube and preclude the possibility of pocketing and stagnation. A condenser with active steam flowing over every tube not only results in a reduced total surface requirement but has the advantage of maintaining a uniformly high condensate temperature by keeping the condensate from all tubes in contact with active steam. These condensers are furnished with high vacuum reciprocating or steam jet pumps. When the latter are used, the primary jets are mounted on the air cooler and discharge into an intercondenser forming part of the cooling proper. The complete compression is accomplished in two stages, secondary ejectors being used to remove the air from the intercondenser under reduced vacuum and discharge it to atmosphere.

The Britsh coal output now is at the rate of 240,000,000 tons a year, which is more than at any time since 1918.

Saving Fuel in Gas Producers

Progress Made in Past 25 Years—Greater Economy May Be Obtained by Using Suitable Accessories in the Gas House—Distinctive Type of Recuperator and Its Application to Furnaces

BY W. B. CHAPMAN

APPROXIMATELY 10,000 gas producers are in use in the United States and with the exception of the modern mechanical units, most of them are in need of alterations or repair to bring them up to a state of efficiency.

The producers in use are divided approximately as follows: 6500 in the steel industries; 1500 in the glass industries; 500 in the chemical industries; and 1500 in miscellaneous industries. Under miscellaneous are included the ceramic industries, lime burning and about 200 gas producers used for power.

Engineers have given much attention to the engine room, some to the boiler room, a little to industrial furnaces, and least of all to the making of raw producer gas. This accounts for the backward condition of the gas house. No definite data have been compiled by the government on the amount of coal used in gas producers, but with the assistance of such figures as are available it is roughly estimated that about 15,000,000 tons of bituminous coal are transformed annually into raw producer gas in the steel industry and about 2,000,000 tons in the glass industry.

In the steel industries about the same amount of coal is used for making gas to heat furnaces as for making steam. In glass-making three-fourths of all the fuel is used in gas producers. But wherever producer gas is used there are apt to be unnecessary fuel losses. A given amount of time and money, if spent on improving conditions in the gas house, usually will bring larger returns than in any other department. In most industries requiring large heating operations more trouble arises in the gas producing departments than in any other part of the business.

Make Considerable Progress

Much progress has been made in the past 25 years in the construction of gas producers. It started with the excellent work of W. B. Hughes. Progress in furnace construction, however, has lagged. The chief incentive to improvement of both producer and furnace has been high priced labor, and the few advances made in furnace construction have been confined mostly to certain labor saving features. Now the situation has changed; fuel saving has been put on a par with labor saving, and interest is being noted all along the line.

In making producer gas there are three steps or operations: 1. Feeding the fuel; 2. Agitating the fire; and 3. Removing the ashes. Progress in producer construction has centered on various ways of performing these three operations automatically. Automatic coal feeding, if continuous and uniform, will increase the B.t.u.'s in the gas about 10 per cent and will improve its uniformity to such an extent that it can be burned in the furnace with a 10 per cent improvement in economy. However, the labor saving due to automatic feeding is slight, and should not be confused with the labor saved by the use of coal-handling equipment and overhead bins, always a good investment for installations of more than one producer.

Automatic agitation, if suited to the kind of coal used, will increase the B.t.u.'s from 10 to 20 per cent, depending largely upon the zeal and skill with which it was formerly hand-poked and the uniformity thus obtained will cause a corresponding saving in utilizing the gas in the furnace. The combined effect of automatic feeding and automatic agitation usually makes possible a saving of 25 per cent of the fuel required for a given operation.

Automatic ash removal is of two kinds—intermittent and continuous discharge. The intermittent type removes the ashes once or twice in 24 hours. It is open to the objection that during the ash removal period the fire is badly disorganized and a poor quality of gas is made for possibly half an hour. The continuous type of ash remover is entirely free from this objection. In Europe the continuous type is much in favor, although but few have been installed in this country.

The saving caused by mechanical ash removal depends largely upon the kind of device used. If the ashes are removed intermittently, and if no effective agitation accompanies the ash removal the saving will be limited to the two or three hours' time required daily for the ash men to shovel the ashes out by hand. If, on the other hand, the ash removal is continuous and is accompanied by suitable agitation of the entire ash bed and lower portion of the fire bed, there will be a considerable saving in the labor required both for manipulating the fire and for cleaning clinkers off the walls. Moreover, the continuous type of ash removal, accompanied by ash agitation, will increase the capacity of the producer about 50 per cent and will save some fuel on account of the improvement in the quality and uniformity of the gas. Unfortunately, the continuous type of ash remover, combining with it effective agitation, is little known in this country, although it is the common type in use throughout Europe.

Types Now in Use

Bearing in mind the foregoing three steps in making producer gas, let us now consider the types of producers in most common use in America. The four best known types are the Hughes, the R. D. Wood, the Morgan and the Chapman. To Mr. Hughes, formerly chief engineer of the Pencoyd Iron Works, is accorded the credit for having installed at that plant in 1897 the first successful mechanical producer in America. This machine is still in operation. The chief feature consists in a vertical water-cooled finger hinged to the stationary top of the producer and made to oscillate between the center and the wall while the body of the producer and its contents revolve underneath. Thus, in time, the entire contents of the producer are stirred. The speed of this producer originally was one revolution in 20 minutes, but every few years it has been increased until now the walls make one revolution in 8 minutes, with considerable increase in capacity.

Since the installation of the first Hughes-type producer, an automatic ash-removing device has been added. It consists of a stationary bar arranged to sweep the ashes from a revolving grate. The bar is inserted once or twice every 24 hours for a short period and then removed. No attempt is made to use the device for agitating the lower portion of the fire bed. Recently an automatic feed—in fact two automatic feeds—has been added, thus making the producer

From a paper presented at the New York meeting of the American Society of Mechanical Engineers, Dec. 5-9, 1921. The author is president, Chapman Engineering Co., New York.

completely mechanical. The double feed gives unusually good coal distribution. This is the oldest producer on the market, and there are more than 800 in operation.

Reducer Walls Revolve

The R. D. Wood-type producer, is somewhat like the Hughes-type in that it uses the vertical stirring arm principle. There are two vertical arms, one near the center and the other near the wall. The arms are bent, but instead of oscillating from center to side they revolve around their vertical axes. The walls of the producer revolve and thus the fire bed is carried past the stirring device. The coal is fed from a rotating drum located eccentrically. As the revolving fire bed comes under the feeding device fresh fuel is supplied to it. The speed of the producer is one revolution in 30 minutes. A steam-turbine blower is supplied in addition to the ordinary steam jet blower. The turbine has an extra large capacity, operates quietly, and usually gives results that are more uniform than a steam jet blower.

The ash is removed by a blade or plow attached to the lower edge of the revolving producer wall and extending down into the ash bed. The blade takes out ashes at a fixed rate, which is somewhat faster than they are made and therefore it cannot be operated quite continuously. Scoops are attached to the skirt of the revolving wall for carrying the ashes around to a suitable point for final discharge. The capacity of this producer is unusually large, owing to the fact that there are two stirring arms in place of one and that the removal of the ash is nearly continuous. Moreover, the diameter of this producer is 10 feet 6 inches instead of the usual 10 feet.

In a producer having vertical stirring fingers it is highly desirable to keep the top and bottom of the fire beds always at the same level so that the stirring finger will always project the right distance into the fire bed for best results. If these fingers should reach too near the ashes, the air blast would break through into the recess or gap left in their wake and soil the gas. A continuous, or at least semicontinuous, ash removal therefore would seem to be necessary in order to keep approximately the same amount of ashes in the fire bed all the time and approximately the same amount of fire.

Vertical Arms Agitate Bed

The Morgan-type producer, like the Hughes-type is 10 feet inside diameter and has about the same capacity. It is used extensively in the steel industry. However, it differs radically in both the method of agitation and in the ash removal. Instead of vertical arms projecting deep into the fire bed, a horizontal arm which rides on the surface is used, it being claimed that surface agitation is quite sufficient and anything more is detrimental. The writer's experience would seem to prove that surface agitation is hardly adequate when coking coals are used. Nevertheless, some excellent results have been obtained. The agitator is in the form of a swinging U-tube with the ends hinged to the stationary top of the producer. The walls and the ashpan of the producer revolve and carry the fire bed around with them. The speed recently has been increased to one revolution in 12 minutes.

The ash is removed by a spiral arm

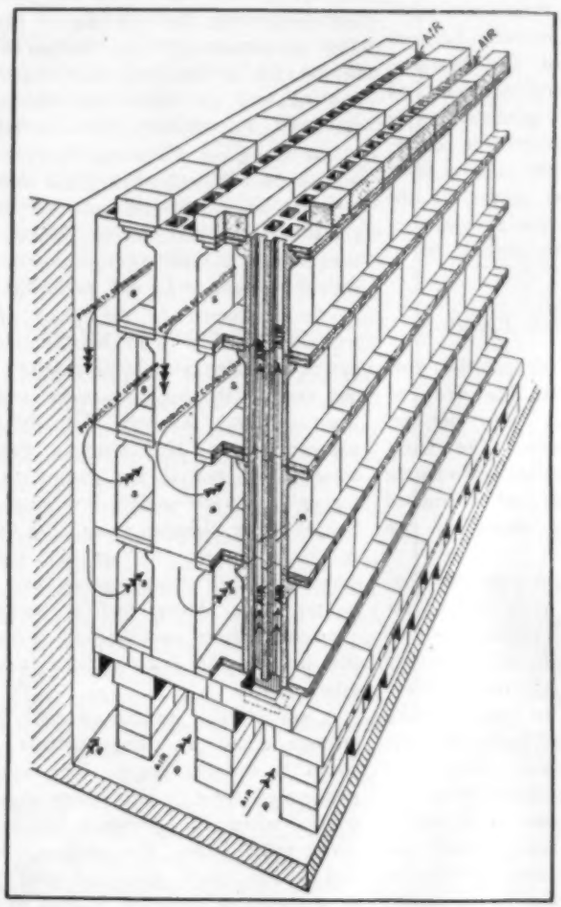


Fig. 1—(Left) Sectional view of the Stein-type recuperator. Gas and air are mixed together a few feet before they enter the furnace. Arrows indicate direction of flow of gas and air

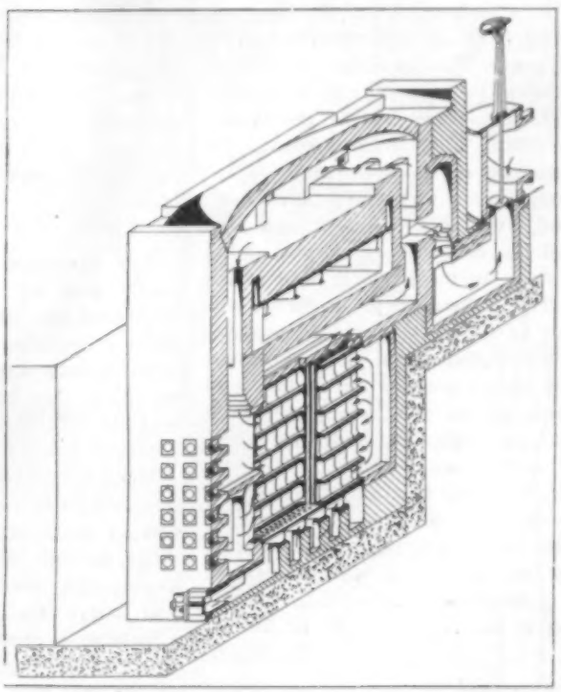


Fig. 2—(Right) Chapman-Stein-type recuperative furnace, which is used extensively in Europe. The tiles form vertical chimneys 6 feet high; thus air enters furnace with a slight velocity

lying on the bottom of the ashpan. Ordinarily the arm revolves with the pan so that no ashes are removed. From one to three times every 24 hours the outer end of the spiral arm is engaged and held fast, thus producing relative motion between the arm and the pan and causing the ashes to flow out rapidly. An ingenious device provides for the automatic release of the ash arm when the producer has made a full revolution. The ashes obtained in this way are exceptionally free from carbon. After the ashes are taken out, the fire bed is broken down by hand poking and drops from 6 to 12 inches.

In all gas producers, that do not provide for continuous removal of the ash there is a definite cycle of operation, extending from one ash-removing period to the next. This is usually a 24-hour cycle, but in some cases it is 12 or even 8 hours, and in the case of the Wood-type producer it is semicontinuous. At the beginning of the cycle which is immediately after the ashes have been removed, the fire bed, though not changed in thickness, is located much lower down in the producer than at the end. This difference in height of the location of the fire bed in the producer from the beginning to the end of the cycle is usually about 2 feet if the ashes are removed but once in 24 hours, but is correspondingly less when the ashes are removed more frequently. It is apparent, therefore, that if a producer is to be agitated uniformly it should be provided either with approximately continuous ash removal or with an agitator which automatically varies in height according to the varying height of the fire bed.

Producer Sold in Parts

The Chapman-type producer, Fig. 3, is sold in parts. The agitator alone may be installed on any stationary producer, or the agitator in combination with the automatic feed may be installed on old or new stationary producers, or, again, a complete mechanical producer including automatic feed, agitator and ash remover may be obtained. The agitator, as will be seen from the illustration, is in the form of a rake with water-cooled teeth. The rake revolves once in 7 minutes and thus every portion of the fire is passed over every 3½ minutes.

The agitator is driven by a patent driving head having two long spiral flanges upon which the agitator automatically screws up as the fire bed grows higher and unscrews when the height of the fire bed drops. These spiral flanges are in sliding contact with two revolving lugs which project inwardly from the hub of the driving wheel. As fresh coal is put on the fire it tends to bury the agitator beneath it. This makes the agitator turn harder through the fire bed, and immediately the torque is increased the driving head screws up to where the forces are again in balance. If the agitator strikes a large clinker fast to the wall it screws up over it and drop down on the other side, thus avoiding any undue strain on the machinery.

The crossarm of the agitator operates a few inches below the surface of the fire bed, and the fingers project down 8 inches further. This makes the depth of the agitation about midway between the surface agitation of the Morgan-type units and the deep agitation of the Hughes and Wood producers. As the fingers project forward the crossarm immediately fills in the gaps in their wake. The out-stroking effect of the crossarm tends to pack the fuel against the wall, which helps to prevent blowholes and clinkers.

Coal Is Distributed Evenly

The automatic feed drops the coal evenly over all parts of the fire bed simultaneously, and thus does not require a revolving fire bed. The object is to produce slightly better gas-making conditions than when the fuel is dropped only in one corner or sector of the producer at a time.

The ash-removing device operates continuously. It consists of a slowly revolving beam extending across the producer through the ashpan and driven by a gear ring which encircles the producer just above the pan, the speed being adjustable to synchronize with the rate the ashes are being made. The speed of the gear ring is adjustable from one revolution an hour to one in 10 hours. After the ashes have been forced out by the beam into the outer portion of the ashpan they are picked up by scoops attached to the gear ring and carried to the point of discharge.

This producer makes use of the European idea of agitating the fire bed from beneath. The ash beam is provided with fingers which project upward and impart motion both to the ashes through which they move and the fire bed resting on the ashes. This is to help in preventing blowholes and clinkers and to increase the capacity. The size of the producer is 11 feet inside diameter.

With the usual more or less unskilled and indifferent handling, any of the four American mechanical producers can make a gas averaging 150 B.t.u.'s instead of the customary 125 B.t.u. obtained in hand-poked producers if operated with zeal. With skilled handling the best mechanical producers average from 160 to 175 B.t.u.'s provided the coal is fair and the rate of gasification does not exceed 25 or 30 pounds per square foot per hour, which is about twice the capacity of hand-operated producers.

Fuel Saving Will Be Large

The best modern producers properly operated usually save about 25 per cent of the coal and an equal amount of labor. These savings should amount to the total cost of the installation in from one to four years.

The temperature in a gas producer is highest at the bottom of the fire, and the thicker the fire the cooler the top. The temperature at the bottom should be as high as the fuel will stand without running too much risk of melting the ash. The melting point of the ash in all the good Pittsburgh gas coals is well above 2500 degrees Fahr. and the melting point of the ash in Illinois coals is about 300 degrees lower. The temperature at the top of the fire bed should be as low as will permit the gas to be conducted to the place of use without forming objectionable tar deposits, and also as low as possible without making the top too sticky and difficult to blow through. Usually a top temperature of 1000 degrees Fahr. is about right, but if the gas is to pass through a water-cooled reversing valve located some distance away 1200 degrees would be better. A "hot top" destroys some of the richest gases and thus wastes fuel. More fuel is wasted in a producer from running with a hot top, that is over 1300 degrees, than from any other cause.

A considerable saving of coal can be brought about by using suitable accessories in the gas house. The most important of these is a pressure regulator, which, when the pressure in the gas main falls, blows the producer harder and makes more gas, and vice versa. A temperature recorder is also of great assistance. A few additional regulating and recording devices are needed to obtain the highest efficiency in daily operation.

But, gasifying the fuel is only half the problem of conserving it. The other half lies in its utilization in the furnace. The two halves of the problem are inseparable. They both lie in the field of the combustion engineer.

A recuperative furnace is never reversed and, except in rare instances, only the air is preheated. The field of application for the recuperative furnace is broad. This type of furnace can be used effectively in both large and small operations for furnace temperatures as high as 2700 and as low as 1400 degrees Fahr. About the only uses to which it is not suited are for operations which periodically require a large over-

load such as the open-hearth process and large forgings over 32 inches in diameter, also for large glass melting tanks. For almost all other purposes the recuperative furnace can be used with great economy.

In many operations where the air is not now preheated it will be found that from 20 to 40 per cent of the fuel can be saved by using a recuperator that preheats the air to within 500 degrees Fahr. of the temperature of the furnace. A recuperator and a recuperative furnace of the Stein type are shown in Figs. 1 and 2. The furnace is used extensively in Europe, where, as might be expected, the necessity for fuel economy has caused engineers to give more attention to the problems of combustion than in this country. The recuperator of this furnace preheats the air to within less than 500 degrees Fahr. of the temperature of the gases leaving the furnace and is as efficient after 6 years of operation as when first installed.

Mixing Feature Distinctive

Another distinctive feature of this furnace is that the gas and air are mixed together a few feet before they enter the furnace but are not given room enough to burn until they reach the combustion chamber. A high heat is then obtained immediately.

The recuperative tile in this furnace is set to form horizontal passages for the spent gases, the joints being protected by a double seal. Each tile is provided with four small vertical passages for the air. These passages form straight chimneys about 6 feet high with no offsets or turns to hinder the accelerating speed of the rising column of air. The energy of velocity of the air thus attained is transformed on entering the furnace into the energy of pressure. The furnace is automatically operated under a slight pressure without requiring the usual blower for the air. The saving of a blower and the power to operate it, however, is not so much of a gain as the fact that the air in the recuperator is not under pressure from a blower but under suction caused by the chimney effect of the vertical passages, and thus the suction of the air inside the tile balances the suction of the spent gases in the passages between the tile. There is therefore no leakage—in fact, no cause for leakage—from the air passages to the gas passages.

It is not the purpose of this paper to dwell on pulverized coal or oil as fuel, but 20 to 40 per cent of these fuels might be saved if air for combustion were properly preheated from the waste gases by a suitable recuperator. From 3,000,000 to 4,000,000 tons of bituminous coal can be saved annually by improving furnaces and furnace operation, and producers and producer operation.

Examine Magnesite Mines in Pennsylvania

About the middle of the last century most of the epsom salts used in the United States was made in Baltimore from magnesite mined in Pennsylvania. The use of epsom salts has continued, but the mining of magnesite on a commercial scale in Pennsylvania ceased prior to 1860. The demand for magnesite on the Atlantic seaboard resulted last summer in an investigation of the possibility of working the Pennsylvania deposits profitably, and in order that the United States geological survey, department of the interior, might be informed concerning the recent developments, the deposits were examined by R. W. Stone.

The deposits examined are near the oxbow of Octoraro creek, on the Pennsylvania-Maryland state line. Some work has recently been done on a deposit just east of Goat Hill, in the southwestern part of Chester county, about two miles north of Rising Sun, Md. The magnesite occurs in the state line serpentine, and all the old pits recently reopened are within a few rods north of the state boundary.

The work done, which consisted of re-excavating the pits, quarries, open cuts, and a shaft that had become filled with dirt, showed that the magnesite occurs in a fine network or stockwork of small veins, most of them less than an inch thick. There seem to be two principal systems of veins which cross at right angles; two veins of the north-south system stand nearly vertical, but those of the east-west system dip southward at a high angle. Two veins were uncovered, one about 14 inches wide and the other, which was found a few rods farther east, in an open cut, about 12 inches wide. A thorough exploration, including the reopening and drainage of a shaft with underground drifts, failed to disclose any larger veins, but it is reported that a body of magnesite about 30 inches wide was found in the shaft at the crossing of two principal veins.

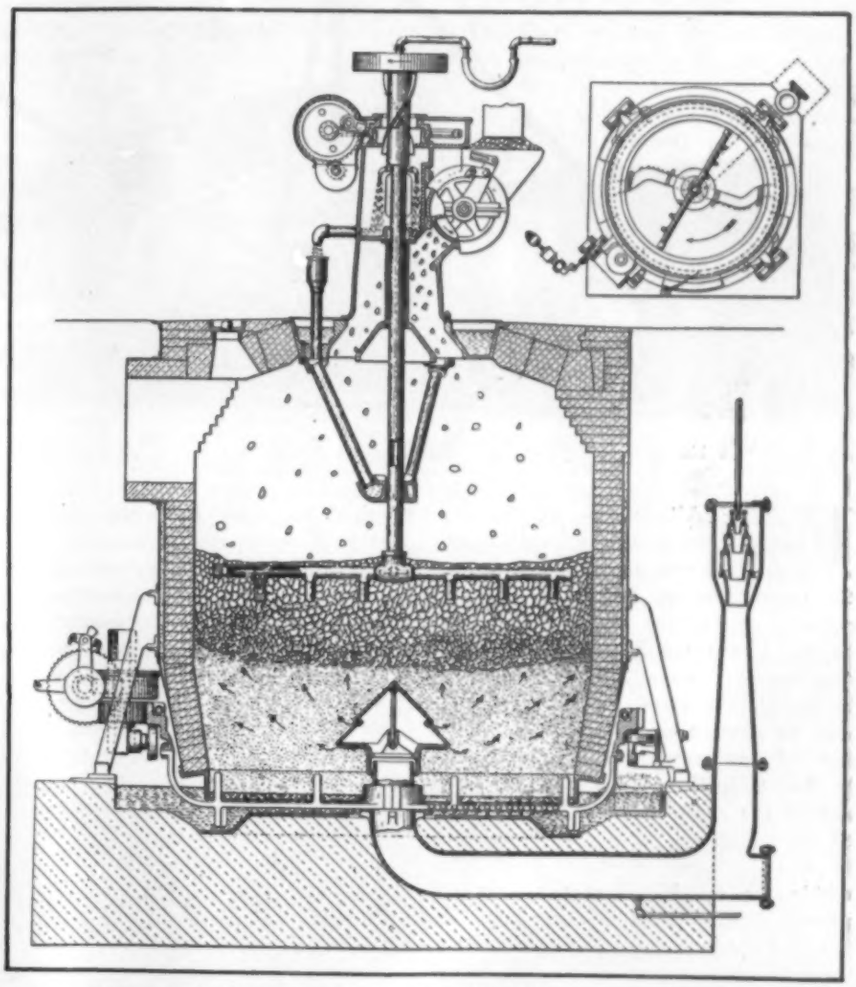


FIG. 3—CROSS SECTIONAL VIEW OF CHAPMAN-TYPE GAS PRODUCER. SMALL PLAN VIEW IS SHOWN IN UPPER RIGHT-HAND CORNER

Developing the Fluorspar Industry

Primitive Methods of Pre-war Period Have Been Largely Abandoned and Important Properties Now Are Equipped with Modern Mining and Milling Apparatus —Narrowing Veins and Water Menace Affect Operations

BY J. M. BLAYNEY

Fig. 1—Storage bin at the mill of the Fairview Fluorspar & Lead Co. where moisture is allowed to drain before gravel fluorspar is shipped

FLUORSPAR is one of the important nonmetallic minerals, consisting of calcium and fluorine in the proportions of 51.1 to 48.9. Until recently it was not widely known, as its use is confined to a few basic industries. It came into prominence in the United States during the world war on account of a threatened shortage. As an essential and efficient flux in the production of open-hearth steel and as the source for the manufacture of hydrofluoric acid, it was recognized as a war necessity, and was brought within the provisions of the so-called administration minerals bill.

The fluorspar industry of today bears little resemblance to that existing six years ago. Few branches of business have so changed in such a short span of years, and probably in no other does the consumer know so little about the source of supply.

From 80 to 85 per cent of the fluorspar produced in the United States is sold in the form of washed gravel fluorspar and is used as a flux in the manufacture of open-hearth steel. Between 15 and 20 per cent is sold in the form of ground or lump fluorspar, and is used in the manufacture of glass and enameled and sanitary ware, in the extraction of aluminum from bauxite ore, and by the chemical industry in the manufacture of hydrofluoric acid. Less than 2 per cent is required for other miscellaneous uses, consisting principally in smelting gold, silver and copper ores, in refining copper, in the electrolytic refining of antimony and lead, in the manufacture of ferroalloys, in the electric furnace, and in the recovery of by-product potash from portland cement kilns. Clear flawless crystals of fluorspar are much in demand for use in lenses of optical instruments. Most of the fluorspar sold in the United States is purchased f.o.b. shipping point, and is marketed through established selling agencies or through brokers.

The world's production of fluorspar for the three-year period 1917-1919 amounted to 744,581 long tons according to the figures of the British government, or an average of 248,160 tons annually. Of this amount the United States produced 72 per cent, England 21 per cent, Germany, 3½ per cent, Canada 2 per cent, and Australia, Italy and Spain in the order named, being the only other countries with recorded production, furnished approximately 1½ per cent. The figures for the smaller producing countries are not yet available for 1920. In that year the United States produced 186,778 short tons and England, 61,245 short tons, of which 17,096 tons were exported to the United States. Canada in the same year produced 11,410 short tons, exported to the United States 7068 tons, and imported from this country 2764 tons. The German production has been entirely required for domestic consumption.

In the United States, while widely distributed geographically, fluorspar has been found in commercially paying quantities in rather limited areas. More than 70 per cent of the domestic production and about 50 per cent of the world's production is mined in Hardin county in southern Illinois near the Ohio river. Almost 20 per cent of the domestic output comes from numerous smaller and scattered mines in Crittenden county, Kentucky, just across the Ohio river from Hardin county, Illinois. In 1920 Colorado produced approximately 6 per cent and New Mexico 3 per cent. The remaining tonnage, being less than 1 per cent of the total domestic production, came from the states of Nevada, Utah, New Hampshire and Arizona in the order named.

In the six year period 1908-1913, a total of 477,127 short tons was produced in the United States, or an average of 79,521 tons annually. In the succeeding six-year period 1914-1919, the production amounted to 992,437 tons, or a yearly average of 165,406 tons, an increase of over 100 per cent.

In the earlier years the smaller demand was easily satisfied, principally by a few operators favorably located on the Fairview-Rosiclare vein in Hardin country who were mining comparatively large bodies at shallow levels

The author is president, Fairview Fluorspar & Lead Co., St. Louis.

and at low cost. In those days the shafts were small, the equipment was crude, and the milling plants were easily and inexpensively constructed. The ore bodies were relatively wide and the ore was of good quality, carrying little waste. The milling methods were simple and labor was cheap.

In spite of the increased price during the war and the pressure brought by the government to stimulate exploration and production, no ore bodies were mined which were not previously known. Some mines previously abandoned because unprofitable were reopened. No new discoveries were made. The increased production came entirely from previously known deposits which were worked to their utmost capacity, occasionally at a sacrifice of future production. This is well illustrated by the recent displacement of one of the important shafts in Hardin county, due entirely to a sacrifice of mining methods for extreme temporary production. It will require a new shaft at much expense and a year's time before any more ore can be taken from this mine.

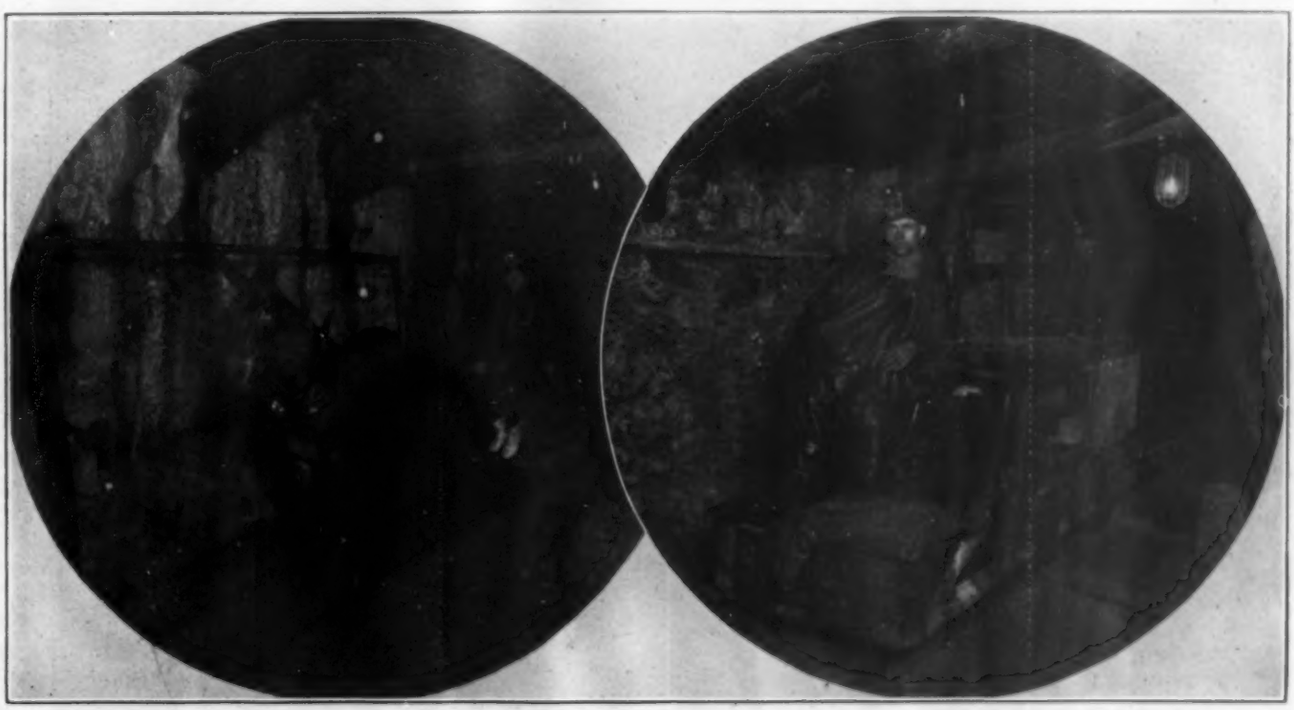
The intensive operations over the past few years exhausted the shallow deposits in practially all of the larger and regularly producing mines. Many of the best situated among the smaller properties were entirely depleted.

Of all the operations in the Kentucky field, only one producing mine has a railroad connection. Most of the others lie from three to 14 miles from the shipping point, and the mine product and supplies must be hauled by teams over dirt roads wholly impassable for such use about five months in each year. Of the operating mines in Illinois, only three have railroad connections; the others are located four to 12 miles from a railroad.

Mode of Occurrence

Nearly all of the fluorspar in the United States occurs in fissure veins standing almost perpendicular except in rare cases. The largest deposit yet discovered, known as the Fairview-Rosiclare vein in Hardin county, Illinois, occurs in a true fault fissure. Fluorspar is found in lenticular masses in the vein, and pinches laterally as well as vertically. The widest chutes of ore seldom exceed 30 feet and the ore is usually not worked narrower than two feet unless in development work. The quality of the mineral varies greatly, usually becoming inferior in quality with depth or being mixed with other minerals such as calcite and zinc, which no producer has yet succeeded in making commercially available, but which seriously complicate the milling problem. As a rule it may be stated that fluorspar decreases in quantity with depth, the fault either pinching or the vein matter being replaced by calcite. In several of the mines on the Fairview-Rosiclare and Blue Diggings veins this occurs between 400 and 500 feet. Some parts of these veins carry 30 feet of calcite and no fluorspar at a depth of 400 feet. While at one point on the Fairview-Rosiclare vein for a limited distance the deposit may extend to a depth of 700 feet, in the opinion of the writer this is an extreme depth, and conditions in the entire Illinois-Kentucky district indicate that practically all of the deposits will be bottomed at 500 feet or less.

There are a large number of small mines and prospects in the Illinois-Kentucky district which together produce a small, irregular tonnage at low cost. In these the mineral is "gophered" without system, usually near the surface. In the mines of the Fairview Fluorspar & Lead Co., the Rosiclare Lead & Fluorspar Mining Co., and in most of the other regularly producing properties, the shrinkage system of mining is followed, although some underhand stoping is done. Levels are driven in the vein at intervals of 100 feet in depth, and are usually carried about 14 feet high when the drift is in fluorspar. Drifts driven through the pinches in the vein are carried 6 to 8 feet wide and 8 feet high, but when driven in ore the drift is carried the full width of the vein. The levels are stulled over at a height of about 8 feet and bins are placed between the stulls at approximately 10 feet centers. The stulls are poled over, leaving openings for the bins. The fluorspar is



OLD AND NEW METHODS OF TR ANSPORTING ORE IN THE MINES

Fig. 2—A mule-drawn train in a fluorspar mine in southern Illinois

Fig. 3—One of the types of motors used in modern fluorspar mines

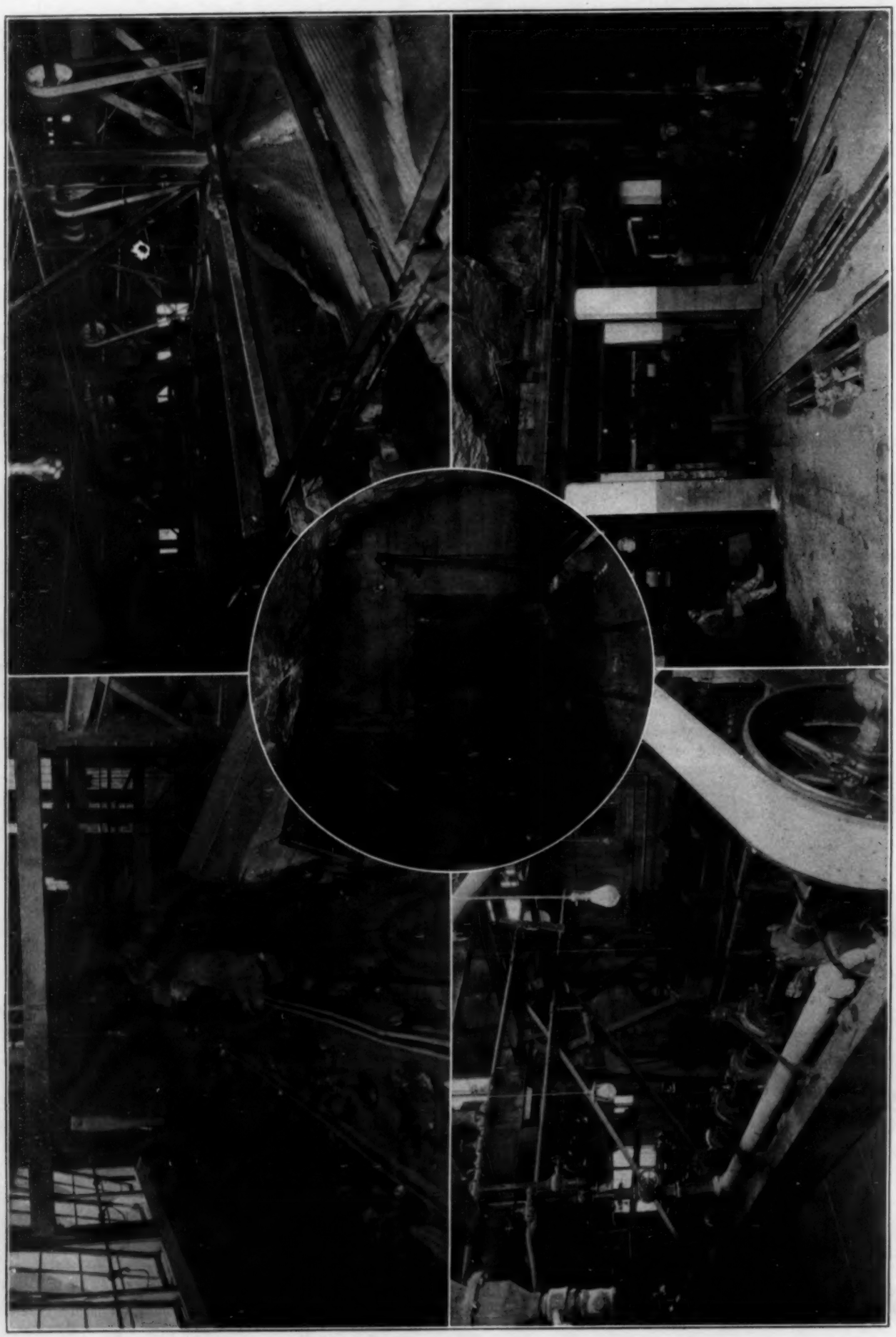


FIG. 4—A PICKING BELT WHERE THE MATERIAL IS EXAMINED AND SORTED FOR SIZE AND QUALITY. FIG. 5—ONE OF THE TYPES OF JIGS USED IN FLUORSPAR MINES. FIG. 6—A CONCRETE BULKHEAD BETWEEN SHAFTS AND VEINS AT THE 500-FOOT LEVEL IN THE GOOD HOPE MINE. FIG. 7—CONCENTRATING TABLES IN A FLUORSPAR MILL. FIG. 8—PUMPING STATION AT THE 500-FOOT LEVEL IN THE GOOD HOPE MINE

then broken and drawn through the bins into dump cars and conveyed to the shaft, where the ore is dumped through the grizzly into an underground skip bin holding from 10 to 300 tons. From the bin it is drawn into 1½ to 2½-ton skips and hoisted in balance to the surface bin as indicated in Fig. 9. The shafts have three compartments, two carrying skips and cages, and the third containing the ladder way, steam, air and water lines. The Rosiclare Lead & Fluorspar Mining Co. and the Fairview Fluorspar & Lead Co. each has a mainshaft located adjacent to the mill, from which ore is dumped direct into the mill bin. The other shafts on both properties are connected with the mill by standard-gage railroad tracks. At these mines the ore is loaded from the overhead bins at the shafts into railroad dump cars and conveyed to an underground bin at the mill, from which it is hoisted into the overhead mill bin, the entire railroad equipment being owned by the mining companies.

Milling Methods

There is little difference in the milling systems used throughout the district, and a description of the methods employed by the Fairview Fluorspar & Lead Co. will convey an idea of typical practice. From the bin at the head of the mill the ore passes through a revolving washer of special design and over a pickling belt, shown in Fig. 4, where waste and a small amount of high grade fluorspar are removed. The latter is either shipped as lump, or is ground, and shipped in bags or barrels. From the picking belt the ore passes through jaw crushers and rolls over trommel screens and classifiers to jigs, shown in Fig. 5, where the gravel fluorspar is separated from the waste, which goes over the jigs as tailings. The fine material from the classifiers and from the jigs (after reclassification) goes to concentrating tables, Fig. 7, where further separation is made. The washed gravel fluorspar is delivered from the mill into a large reinforced concrete bin, shown in Fig. 1, which is provided with sub-drainage, where the moisture is allowed to drain before the fluorspar is loaded into railroad cars for shipment.

In the Kentucky district in Crittenden county, the ore bodies are narrower and shorter than those on the Fairview-Rosiclare and Blue Diggings veins in Hardin county, Illinois, and the pinches are much longer. The largest producing mines in Kentucky are the Haffaw mine, owned by the Aluminum Ore Co., the Keystone and Mary Belle mines, owned by the Kentucky Fluorspar Co., the Franklin mine owned by the Fairview Fluorspar & Lead Co., and the Hodge mine of the West Kentucky Ore Co. In the Illinois district by far the largest operations are those conducted by the Fairview Fluorspar & Lead Co. and the Rosiclare Lead & Fluorspar Mining Co., extending on the Fairview-Rosiclare vein for a distance of about two miles in a northerly direction from the Ohio river. Just north of the Rosiclare properties underground development is being commenced on the property of the Hillside Fluorspar Mining Co. where extensive surface installation has been made. Another property is that owned by the Spar Mountain Mining Co. at Cave-In-Rock, about 14 miles up the Ohio river from Rosiclare. Aside from the above mentioned properties, the other operations in Hardin county, Illinois, are less extensive than those in Kentucky.

FIG. 9—A SURFACE ORE BIN AT EXTENSION MINE NO. 1 OF THE FAIRVIEW FLUORSPAR & LEAD CO.

In all mines in the district, the handling of water has become an increasing problem with depth. This is particularly true of the mines on the Fairview-Rosiclare vein near the Ohio river. In the earlier days on the higher levels the normal inflow of water was such that the problem of unwatering the mines after flooding from high water in the Ohio river was less difficult. Today water conditions present a serious problem. When its mines are operating, the Fairview Fluorspar & Lead Co. pumps approximately 3000 gallons per minute, most of it from the 500 foot level. On a basis of normal operations, the company pumps 164 tons of water for every ton of fluorspar produced.

All of the producing mines on the Fairview-Rosiclare vein are subject to being flooded by high water from the Ohio river which enters the underground workings through fissures in the rock. Formerly it was the practice to sink the shafts on the vein. As the water flooded both the mine and the shaft, underground pumps were useless. Consequently the mine had to be unwatered from the surface by means of a sinker pump lowered in the shaft, sometimes assisted by bailing—a slow process, resulting in long interruptions to production. These interruptions would be much longer today than formerly on account of the greater depth and more extensive character of the workings. In order to avoid this situation, the Fairview Fluorspar & Lead Co. adopted an entirely new method of meeting the problem. Its present shafts are unique

Increasing Mining Difficulties Swell Production Costs

CONSUMERS of fluorspar doubtless are at a loss to know why the cost of this material has more than doubled in six years. The Fairview Fluorspar & Lead Co. in the past six years produced approximately 27 per cent of the total domestic output, and therefore its production figures are conservatively representative. As certified by chartered accountants and auditors of the company, its mine cost of production at its mines in Illinois for 1920 was $16.52 per ton and its administration and overhead expenses amounted to $2.15 per ton, or a total operating cost of $18.67 per ton. These figures do not include any selling commission. In the mine cost of production depletion is figured at $1.50 per ton. This and other fixed charges such as depreciation, employer's liability, taxes and insurance, which cannot be reduced and many of which actually increase from year to year, total $4.63 per ton. There is left, therefore out of operating cost, subject to fluctuation, $14.04, of which labor amounts to approximately one-half. The mining scale in the district has not been excessive and cannot be reduced more than 20 per cent. Assuming a general 20 per cent reduction in all items other than fixed charges, the probable cost for operations in 1922 will amount to $15.84 per ton, to which must be added selling commission and whatever profit the fluorspar producer is to receive. The above cost figures will probably be a surprise to consumers, who recall that just prior to the summer of 1916 fluorspar was sold at $7.00 per ton, f.o.b. shipping point. Some of the reasons given for the sharp increase in cost of operation follow: Prior to 1917 the entire fluorspar industry was conducted at a loss. None of the regularly producing properties prior to that date paid returns to its owner. There was no system of cost accounting. Such items as depreciation and depletion were not considered. No capital reserves were accumulated and money which should have been set aside for that purpose was actually spent in operation. No new ore bodies have been discovered in the United States since 1917. The production during the period from 1917 to 1920, which equalled the total output of the previous eight years, was drawn entirely from these existing mines. Future costs and mine conditions were sacrificed during the war to an excessive temporary production. The more cheaply produced fluorspar on the higher levels has been extracted. Prior to the war, one ton of coal costing $1.05 including freight was consumed in producing three tons of fluorspar. At the present time, a ton of fuel costing $3.11 including freight, produces only two tons of fluorspar.

FIG. 10—ABOUT 164 TONS OF WATER ARE PUMPED FOR EACH TON OF FLUORSPAR PRODUCED

As the workings go deeper, fluorspar as a general rule loses in quality and frequently becomes intermixed with other minerals. This complicates the entire milling problem. Usually on the low levels the vein is not as wide as above, and the pinches in the vein are much longer, representing much more expensive dead work.

in the fluorspar district in that they are sunk some distance off the vein in the solid country rock, which is practically water-tight, and crosscuts were driven to the vein. In the crosscuts still in the country rock, heavy reinforced concrete bulkheads were built, which are fitted with suitable heavy steel doors as shown in Fig. 6. During the time the mine is threatened with flooding the steel doors are closed and only the shafts are kept clear of water. The bulkheads are equipped with siutable water pipes and valves so that when the river recedes these valves can be opened and the water permitted to flow to the station pumps situated near the shafts. This system permits the use of heavy pumping equipment. The Good Hope mine of the Fairview Fluorspar & Lead Co., which required six months to unwater by the old system, can be unwatered in two weeks by the new method. The pumping equipment is capable of handling between 3500 to 4000 gallons of water per minute on a 500-foot lift. The Extension mines of the Fairview company are protected by similar means.

In the period from the years 1910 to 1913 inclusive, each year the Ohio river rose to a point which would flood all of the present producing mines on the Fairview-Rosiclare vein. Since 1913 the river has never reached such a point, but it is a definite contingency annually facing every operating property on the Fairview-Rosiclare vein. While the large expense of underground work and equipment required by the system installed by the Fairview Fluorspar & Lead Co. has increased its cost of production, it is no greater in the long run than would now be the cost of unwatering under the old system, and it has insured the company against long interruptions to production.

Exploration For New Deposits

It is the consensus of opinion of mining engineers familiar with this industry that fluorspar deposits cannot be determined with any reasonable assurance except by the sinking of shafts and the driving of drifts. Diamond drilling is practically useless for the purpose of blocking out ore bodies. This is due, first, to the frequent pinches, both lateral and perpendicular, and the rapidly changing widths and erratic character of the deposits themselves. In the second place, the district is largely honeycombed with narrow fissures or slips containing fluorspar from a few inches to a foot in width, lying at various angles and wholly unconnected with any commercial deposit of fluorspar, rendering the reading of core results uncertain. Diamond drilling has been tried for many years in the district by half a dozen different companies, but no commercial body of fluorspar has ever been developed by its use. Expensive shafts have been sunk on the apparent indications of diamond drill cores, and in each case have failed to develop ore bodies. One of the largest companies in the district, which has diamond drilled continuously for many years, recently announced its intention of abandoning its general use. Churn drilling is wholly impracticable except for the purpose of determining geological structures.

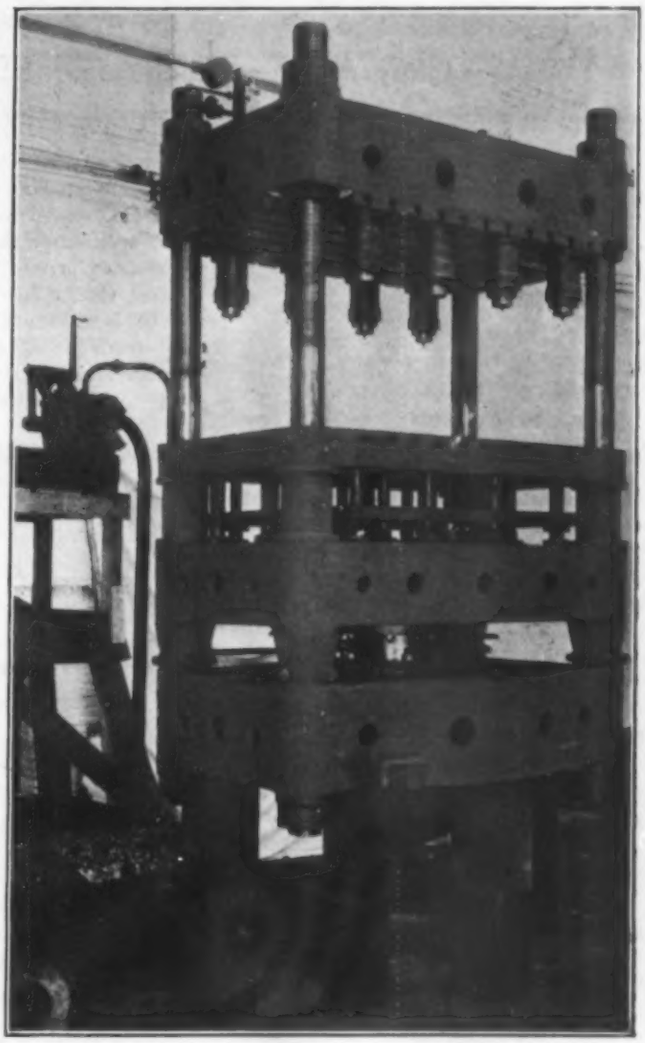
In view of the wide geographical dis-

tribution and frequent occurrence of fluorspar, it is the opinion of geologists and mining engineers familiar with the industry that new commercial deposits will be located if sufficient inducement exists for the necessary exploration work. In view of the difficulties attending the development of new ore bodies, the necessary new discoveries will not be developed in sufficient quantities to take care of future requirements of the steel plants unless the industry is placed on a basis of reasonable stability. As the average steel plant uses less than 10 pounds of fluorspar in producing a ton of steel, a difference of $5 per ton in the price of this raw material means a difference of less than 2½ cents in the cost of the manufacture of a ton of finished steel. The steel companies are squarely faced with the question whether it is better for them to keep fluorspar prices at the lowest possible level, thereby effecting during times of oversupply this slight saving of cost, or to adopt a policy which will give assurance of an adequate future supply of an essential raw material. Upon the determination of this question will depend the future of the industry. The fluorspar producers should be satisfied with a fair profit over the cost of operation in keeping with the hazards of the business. If the industry can be stabilized and such reasonable profits assured, the industry will develop sufficiently to take care of all future domestic requirements. On the other hand, if the consumers view the situation solely from the standpoint of such slight temporary expediency, profiting neither by the experiences of the past nor considering the possibilities of the future, the industry cannot prosper and will not expand. Many of the producers would be quickly forced out of business. Some of the larger and lower cost operators would probably continue producing so long as their present ore reserves might last. With the disappearance of those reserves, production in the United States would practically cease. Then would the truth be realized, that it is much easier to destroy a mining industry than it is to create one.

The Industrial Furnace Builders, Inc., 53 West Jackson boulevard, Chicago, has been formed to construct all types of heating furnaces except electric. It now has in hand the construction of a twinchamber malleable melting furnace equipped with powdered coal burning devices for the Niagara Radiator & Boiler Co., Eighty-third street and Woodlawn avenue Chicago.

Builds Large Hydraulic Press for Body Work

For forming automobile bodies, an unusually powerful press has been built recently by the Southwark Foundry & Machine Co., Philadelphia. This press, which is shown in the accompanying illustration, has a capacity of 450 tons. The main ram is located in the lower base to which are secured the four columns, this arrangement providing a sturdy construction. Four hydraulic cylinders are carried by the stripper platen, these acting upon a forged steel plate which in turn carries 60 stripper pins 1½-inch in diameter. These pins project through the clamping platen, which is a solid steel casting provided with T-slots. Eight hydraulic jacks of 5-inch diameter rams and 5-inch stroke are carried on the top platen and are used for clamping. To meet conditions of the various size dies which may be employed under the press, the top platen is adjustable. A single lever operating valve controls the press, first admitting low pressure to the four jack cylinders and at the same time admitting low pressure to the main ram. As soon as the dies come together high pressure is admitted through the steel operating valve, thus completing the work on whatever shape is to be formed in the dies. The clamping cylinders are controlled automatically from the low pressure filling tank and are capable of standing a hydraulic pressure of 5000 pounds per square inch. Die space on the press is 5 x 7 feet and the vertical opening between the platens is 18 inches minimum and 4 feet maximum.



HYDRAULIC AUTOMOBILE BODY PRESS HAVING 450 TONS CAPACITY

The contract for construction of the exposition building to house the exhibits of the United States at the Brazilian exposition next September has been awarded to Dwight P. Robinson & Co., New York, which already has large construction work under way for the Brazilian government in northeastern Brazil. Representatives of the company and of Frank L. Packard, architect, Columbus, O., who will design the building, sailed recently for Brazil to begin the work at once. The exposition will open Sept. 7.

Cement Output in 1921

Production of Portland cement in the United States in 1921 amounted to 98,293,000 barrels, the federal geological survey reports, which was 98 per cent of the production in 1920 and exceeded every year save 1920. Shipments in 1921 totaled 95,051,000 barrels, almost 99 per cent of the 1920 movement. Imports for the year were 122,317 barrels and exports 1,181,024 barrels. Production in December was 6,559,000 barrels, compared with 3,367,000 in December 1920. At the end of December stocks amounted to 11,938,000 barrels.

American Malleable Cast Iron

A Series of Related Articles Dealing with the Development of the Industry, Modern Methods of Manufacture, Metallurgical Principles Involved and the Properties of American Malleable Iron

BY H. A. SCHWARTZ

Chapter XX—Mechanical Effects of Plastic Deformation

(Concluded from Last Week)

WE HAVE considered the effect of a series of stresses of known intensity and direction upon a ductile material. Another important condition is that in which, instead of a series of known stresses the specimen is required to undergo a series of known increments of energy.

Impact testing by a series of equal or increasing blows, is the principal application of this type of plastic deformation. In this case the intensity of maximum stress is a function both of the energy input of the blow and the elastic and plastic deformation of the specimen. The latter factor depends upon the previous plastic deformation of the specimen and hence is a function of the magnitude and number of the preceding series of inputs of energy.

Since malleable is often subjected to repeated impact in service and occassionally in testing, this condition is of special importance in connection with a study of that metal.

If the load deformation curve of a given specimen under plastic deformation were capable of mathematical definition in terms of its dimensions and properties and the rate of application of the load, a mathematical study of this problem would be feasible although probably quite complex.

However, the problem may be simplified by assuming that we have experimentally determined the load-deformation diagram of a given specimen under given conditions. The load-deformation diagram in every respect is similar to a stress-strain diagram except that the co-ordinates are actual load and actual deflection instead of unit stress and unit strain. We can conceive that for a given specimen such a graph might be autographically produced under rates of application of load as rapid as are encountered in impact testing.

Referring to Fig. 13 let *OLU* represent the load-deformation curve described above, *L* being the elastic limit and *U*, the ultimate strength and tan Ø the modulus of elasticity. Then the energy imparted to the specimen at any given load and deformation for instance is the area below the curve beginning at *O* and ending at a_n. For example, OLa_1a_2, etc., a_nb_n. If this energy input be large enough the point a_n will then reach *U*, the energy being the represented by OLa_1a_2 etc., *UV* and this energy will produce rupture under impact.

Therefore, if impact is produced by a single blow, the energy of rupture is measured by the entire area below the curve as shown above. A blow having an energy of impact of *OLM* or less will not produce a plastic deformation, the specimen will return to its original form after the load is removed and will have absorbed no energy. If the energy of impact be equal to OLa_1b_1 for example, when the load is removed the deformation will decrease along a_1c_1 (parallel to *OL*) and a permanent set Oc_1 will remain. The energy OLa_1c_1 will have been used up in plastic deformation and the elastic limit will be raised to a_1 and the deflection at the elastic limit to c_1b_1. The new load deflection curve becomes *c a a* etc., *UV*. Thereafter any impact of energy not greater than $c_1a_1b_1$ will produce elastic deformation only. Suppose the second impact is equal to $c_1a_1a_2b_2$ then by similar measuring the new load deflection curve becomes $c_2a_2a_2a_n$ etc., *UV* the third impact moves it to $c_2a_2a_n$ etc., *UV* and so on, and after *n* blows it becomes c_na_n *UV* and finally perhaps *WUV* in which case a blow equal to or greater than *WUV* will break the specimen.

Suppose now that we assume an equal energy input with each blow. Then $OLa_1b_1 = c_1a_1a_2b_2 = c_2a_2a_3b_3$ etc., $= c_{n-1}a_{n-1}a_nb_n$ It is obvious by inspection that up to the point of maximum load *G* each succeeding one of the similar triangles $c\,a_1b$, $c_2a_2b_2$ etc., is of larger area than its predecessor. These triangles represent the portion of the energy of impact expended on elastic deformation Consequently a smaller percentage of the constant increment of energy is available for plastic deformation with each succeeding blow up to that producing maximum deflection. Beyond this point an increasingly larger amount of each energy increment is available for plastic deformation.

Finally if $\Sigma\, c_1a_1a_2c_2 + c_2a_2a_3c_3 - c_{n-1}a_{n-1}a_nc_n$ etc., is commensurate with *OLGUW* the specimen absorbs on the last blow energy equivalent to *UVW*.

The specimen has then absorbed plastically the energy *OLGUV* which it would have absorbed if broken by a single impact. Since, however the area $c_{n-1}a_{n-1}a_nc_n$ is always less than the area $c_{n-1}a_{n-1}a_nb_n$ the energy absorbed by the metal at each blow is measurably less than the total energy of impact, a large part of the energy of impact being returned by the specimen during its elastic recovery.

Obviously since there is a definite amount of energy not absorbed by the specimen at each blow a smaller percentage of the energy of impact is absorbed the lighter the blow. If the energy of rupture be measured by the aggregate of the energy of the entire number of blows to produce rupture this sum will be higher the smaller the individual blows. Consequently testing a metal by successive impacts can yield quantitatively comparable results when all the specimens are identical in form and quality in addition to the constancy of the hammer blow. Of course this condition is impracticable of attainment, the quality being unknown before the test.

In practice this means that only carefully prepared specimens of similar material are capable of fairly accurate comparison by repeated impact test.

One or two further conclusions may be gained from the study of the diagram. Energy equivalent to the area *OLM* is absorbed by the specimen elastically. The material will withstand an indefinite number of impacts of this magnitude without permanent deformation.

Were a similar triangle drawn with its apex at *G; FGH* this area will represent the maximum elastic absorption of energy the specimen can sustain when by repeated impact the elastic limit has been raised to the ultimate strength. Any increment of energy less

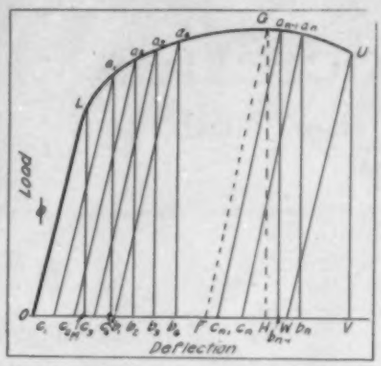


FIG. 13—DIAGRAM CONSTRUCTED FROM LOAD-DEFORMATION CURVE

than this will never fracture the piece but will produce a maximum deflection after a given number of blows which will not be further increased by further repetitions of the impact.

The area $OLM = LM.\ LM \tan \phi$ = modulus of elasticity × square of elastic limit.

The area $FGH = GH.\ CH \tan \phi$ = modulus of elasticity × square of ultimate strength.

From the above we may calculate the blows required to make an impact test workable on a given specimen.

The deflection at each successive blow can be determined graphically under given conditions from the diagram. An impact test in which the energy increment increases with each blow can be studied in a similar manner. In that case there is no possibility of coming to a maximum deflection without fracture for the increased energy of the succeeding blow would carry the deformation beyond *G*. In such a test there is great danger that the last blow will be equivalent to far more than the energy *WUV* and the unabsorbed energy of the blow will be credited also to the specimen.

We may generalize to the effect that no method of repeated impact can correctly measure the energy of rupture of a ductile metal. In a similar manner we may study graphically the effect of alternate impact in opposite directions, although we may be confronted with the difficulty of securing the necessary load deformation curves. In Fig. 14 U^1L^1OLU is the original curve for the specimen. An increment of energy Oa_1b_1 deforms it to a_1 and raises the elastic limit to that point. The load-deformation diagram then becomes $a_1O_1L^1_1U^1_1$ and an increment of energy in the opposite direction to the first $O^1L^1_1a_2b_2$ produces a load of a_2b_2 and a deformation O_1b_2. The new elastic limit becomes a_2 and the new diagram $a_2O_2U_2$.

The next increment of energy is diagramed as $O_2a_3B_3$ and so on. It will be seen that each impact in one direction apparently decreases both the ultimate load and elongation in the opposite direction an expression of the weakening caused by a negative plastic deformation.

In the absence of stress strain diagrams under dynamic loads we may turn as the best available substitute to the various stress strain diagrams given throughout these chapters and from them and the dimensions of the specimens estimate the probable load deformation curves to be used.

It is obvious that those materials in which the elastic limit is quite high accompanied by a high elongation are these which will well resist repeated impact. The high elastic limit will dissipate a large amount of energy in elastic deformation at each blow while the high elongation provides a large amount of reserve energy for plastic deformation before rupture takes place.

The Young's modulus of all ferrous materials is practically the same, hence the deformation at the elastic limit is in direct proportion to the elastic limit. In steel high elastic ratio is obtained only at the expense of elongation and *vice versa*. The various graphs for malleable, indicating a constant and high elastic ratio and an elongation increasing with strength account for its excellent behavior under repeated impact even when of sufficient magnitude to produce plastic flow.

In this connection, incidentally the yield point of metal is the governing factor in ferrous materials for the small reduction in the area representing energy due to the curvature of the stress-strain diagram between the proportional limit and yield point is negligible.

Plastic deformation has been discussed mainly because of its great importance in the utilization of malleable. No one realizes more than the author the unsatisfactory state of knowledge and the lack of precise numerical data. If this chapter has enabled the reader to form even a qualitative image of the resistance of the metal above the elastic limit that is all that can be expected. An infinite amount of further study will be required before concrete mathematical analyses will be possible.

Attempt To Commercialize Direct Process

London, Jan. 28.—One of the latest companies to become identified with the Basset steelmaking process in France is the Trefileries et Laminoirs du Havre. This method of making steel attracted attention in metallurgical circles last year and that, as previously described in THE IRON TRADE REVIEW, the process is somewhat similar to the Jones step process of making steel direct from ore. The latest French interests to become associated with the Basset process state that efforts are being made to apply the Basset principle to steelmaking industrially. The process, it is said, has been verified from the chemical standpoint but the operation has not been perfected entirely from the practical standpoint. The situation as expressed by the director of the Trefileries et Laminoirs du Havre is that after encountering many technical difficulties the results appear encouraging although not yet sufficiently satisfactory to ensure commercial application.

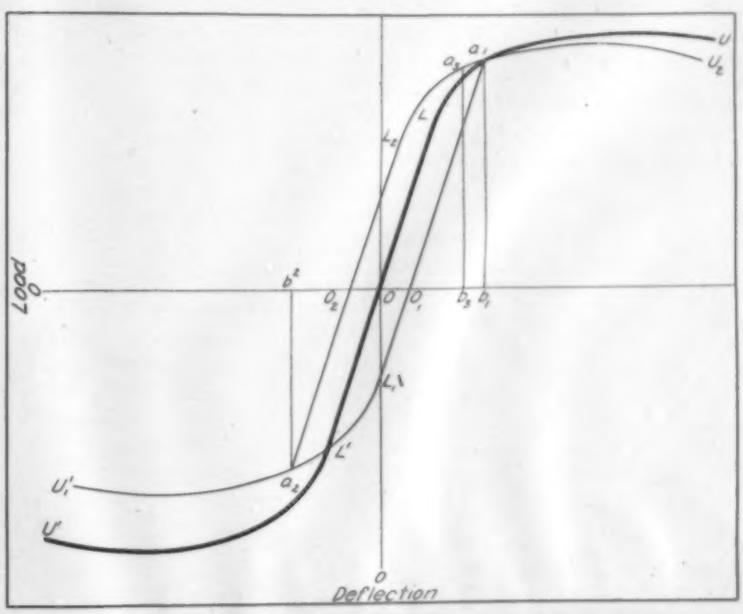


FIG. 14—LOAD-DEFORMATION DIAGRAM OF SPECIMEN SUBJECTED TO ALTERNATE IMPACT

Late News of the Societies

Notes on Past and Coming Meetings of National and Local Trade and Technical Organizations

ARRANGEMENTS have been practically completed for the program of the winter meeting of the American Boiler Manufacturers association to be held at the Fort Pitt hotel, Pittsburgh, Feb. 13. The program announced will include the following papers: "American Labor Policies," by Walter G. Merritt; "Purposes and Accomplishments of the National Civic Federation," by Ralph M. Easley; "Taxation," by C. V. Kellogg; "Limitation of the Field for the Use of Cast Iron Boilers," by W. A. Drake; "Welding as Applied to Boilers and Other Pressure Vessels," by E. R. Fish; "An Account of the Operations of the American Uniform Boiler Law Society," by Charles E. Gorton. The latter speaker will answer questions in connection with the National Board of Boiler and Pressure Vessel Inspectors, particularly as applied to stamping and preparing data sheets for boilers.

* * *

Select Convention City

Announcement has been made by the Association of Iron and Steel Electrical Engineers that the 1922 convention of that organization will be held in Cleveland Sept. 22-25 at the new auditorium. The auditorium has 35,000 square feet of floor space for exhibition purposes.

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Use of Powdered Coal Described

At the annual meeting of the mechanical section, Engineers' Society of Western Pennsylvania, held at the William Penn hotel, Pittsburgh, Feb. 7, a paper was presented on "Powdered Coal for the Generation of Steam." Its authors, Henry Kreisinger and John Blizzard, are research engineer of the Combustion Engineering Corp., and fuel engineer of the United States bureau of mines, respectively, and the data presented largely were the results of tests conducted by these interests. The paper was illustrated by lantern slides.

* * *

Mine Turnouts Described

J. D. Martin, retiring chairman of the mining section of the Engineers' Society of Western Pennsylvania, read a paper at that section's annual meeting held at the William Penn hotel, Tuesday, Jan. 31, at 8 p. m. Mr. Martin is chief engineer of the Hillman Coal & Coke Co., Pittsburgh, and his paper "Standardization of Mine Turnouts" was illustrated by lantern slides. Mr. Martin was succeeded by W. A. Weldin, Blum, Weldin & Co., engineers, Pittsburgh. Other officers elected at this meeting follow: Vice chairman H. N. Eavenson, Eavenson & Associates, Pittsburgh, directors, E. H. Coxe, Snowden Coke Co.; J. O. Durkee, Pittsburgh; R. R. Hice, Beaver, Pa.; J. R. Elliott, Baton & Elliott, Pittsburgh; and R. W. McCasland, Consumers' Mining Co., Pittsburgh.

* * *

Changes Convention Date

The American Society for Steel Treating announces that its annual convention and exhibition scheduled for Sept. 25-30 has been delayed one week to Oct. 2-7 with the place of meeting, the General Motors building, Detroit, remaining the same. According to the secretary, W. H. Eisenman, 4600 Prospect avenue, the change was made in order that the business sessions and the exhibition could be accommodated in the same building. Ample room will be provided in the exhibition hall which is 60 feet wide and 500 feet long. Both gas and electric connections for operating equipment are available. Entertainment features also will be held in the General Motors building. It was announced at the same time that the sessions for the New York sectional meeting to be held in New York, March 3, will be held at the Hotel McAlpin, which has been made the general headquarters.

* * *

Industrial Engineers Organize

The Society of Industrial Engineers was organized recently in the William Penn hotel, Pittsburgh, under the auspices of the Engineers' Society of Western Pennsylvania, of which the new organization will become a section. The following officers were elected: President, D. W. K. Peacock, personnel director of the Philadelphia Co., Pittsburgh; vice president, George H. Cherrington, president and director of both the Brown & Zortman Machinery Co., and the Machinists' Supply Co., this city; and secretary-treasurer, F. E. Schuchman, director of the Homestead Valve Mfg. Co., Homestead, Pa. The first regular meeting of the new society will be held in the William Penn hotel on Friday evening, Feb. 17, when C. E. Knoeppel of New York will speak on "Waste or Wages—Which?"

* * *

British Metals Institute To Meet

The annual meeting of the British Institute of Metals will be held in London, March 8 and 9, at the Institution of Mechanical Engineers, London. The annual dinner will take place Wednesday evening, March 8. The annual May lecture is to be delivered Wednesday, May 3, at the Institution of Mechanical Engineers by Sir Ernest Rutherford on the "Relation of the Elements". The fall meeting of the institute will be held at Swansea, South Wales, Sept. 20-22, 1922.

Convention Calendar

Feb. 15-17—American Institute of Electrical Engineers, mid-winter convention in New York. F. L. Hutchinson, 33 West Thirty-ninth street, New York, is secretary.

Feb. 20-25—American Institute of Mining and Metallurgical Engineers, spring meeting, New York. Frederick F. Sharpless, 29 West Thirty-ninth street, New York, is secretary.

Feb. 27-March 2—American Ceramic society, will hold twenty-fourth annual convention at St. Louis. Ross C. Purdy, Ceramics building, Ohio State univresity, Columbus, O., is secretary.

March 3—American Society for Steel Treating, sectional meeting, McAlpin hotel, New York. W. H. Eisenman, 4600 Prospect avenue, Cleveland, is secretary.

April 4-7—American Chemical society, spring meeting, Birmingham, Ala.

April 27-29—American Electrochemical society spring meeting in Baltimore.

May 4-5—Iron and Steel institute, annual spring meeting at the Institution of Civil Engineer's building, London. George C. Lloyd, 28 Victoria street, London, S. W. 1, is secretary.

May 8-11—American Society of Mechanical Engineers, spring meeting at Atlanta, Ga. Calvin W. Rice, 29 West Thirty-ninth street, New York, is secretary.

May 15-20—National Association of Purchasing Agents, seventh annual convention also exposition at Exposition park, Rochester, N. Y. L. F. Boffey, 19 Park place, New York, is secretary.

June 5-9—American Foundrymen's association annual convention and exhibition at Exposition park, Rochester, N. Y. C. E. Hoyt, Marquette building, 140 South Dearborn street, Chicago, is secretary.

June 26-July 1—American Society for Testing Materials, twenty-fifth annual meeting, Chalfonte-Haddon Hall hotel, Atlantic City, N. J. C. L. Warwick, 1315 Spruce street, Philadelphia, is secretary.

Sept. 11-15—Association of Iron and Steel Electrical Engineers, 1922 convention at the new auditorium, Cleveland. John F. Kelly, Empire building, Pittsburgh, is secretary.

Employment Gains

4.2 Per Cent in January—Steel Industry Total Is Less

Washington, Feb. 7.—Iron and steel plants on Jan. 31 were employing 0.21 per cent fewer persons than on Dec. 31, while for all industries the increase in employment in that period was 4.2, states the federal employment service. The January survey of the service reveals these eight industries employing more persons on Jan. 31 than on Dec. 31: Vehicles for land transportation, leather and its finished products, metals and metal products, paper and printing, food and kindred products, liquors and beverages, chemicals and allied produuets, and miscellaneous. These six industries reported decreases: Iron and steel, tobacco manufacture, railroad repair shops, textiles and their products, lumber and its manufactures, and stone, clay and glass products. Of 65 cities surveyed, 40 recorded employment increases in January over December, Detroit leading with a gain of 89.9 per cent, due to the reopening of automobile plants after the holiday. In other cities the gain was: Cleveland, 7; Baltimore, 4.9; Chicago, 4; Reading, Pa., 1.7; Pittsburgh and Youngstown, 0.5. Among the 25 cities reporting decreases were Johnstown, Pa., with 14.1 per cent; Philadelphia, 8; Buffalo, 6.7; Birmingham, Ala., 6.2 Cincinnati, 2.9; and Milwaukee, 0.66.

Landis Award Accepted, Building Revival

Chicago, Feb. 7.—What appears to be a final settlement of the long struggle between the Chicago building trades and building employers was reached Feb. 3 when the trades council unanimously accepted the wage award recently made by Judge Kenesaw M. Landis, arbitrator.

The adoption of a resolution marked a complete surrender, the council accepting the wage rates and working agreements formulated by Judge Landis and also agreeing that nonunion men now employed in various trades may continue at work until employers feel satisfied the unions will fulfill the provisions of the Landis award.

An important agreement is that no jurisdictional strikes shall occur. Labor union leaders say they are anxious to establish their sincerity and win the approval of the public. For some time a committee of citizens has worked with the Chicago Association of Commerce toward establishing the open shop in Chicago as the only solution of the building trades problem.

The building council's action indicates that long delayed construction work will be resumed immediately.

Wants Labor and Rate Bodies Consolidated

CONSOLIDATION of the railroad labor board with the interstate commerce commission has been urged before the senate interstate commerce committee by a committee of the National Industrial council, representing 50,000 manufacturers. This would place control of the principal item of railroad expense in the same hands that devise the principal item of income—rates and fares. The repeal of the Adamson and "full crew" acts also has been asked. Employers and manufacturers associations of more than 30 states were represented on the committee, which included F. W. Hutchings, Detroit, of the Charcoal Iron Co. of America, and J. L. Kimbrough, Muncie, Ind., of the Indiana Bridge Co.

Molder's Wages Cut; Open Shop in Effect

San Francisco, Jan. 12.—Fifty of the leading foundries of the Bay district cut wages of their employes 10 per cent, effective Jan. 1, At the same time the American plan of employment was put into operation, following the expirations of agreements between the molder's unions and other affiliated crafts and the associated employers on Dec. 31. Six thousand men are affected by these changes.

The agreements, which were in effect continuously for 25 years, terminated with the merging of the California Foundrymen's association and the California Metal Trades association.

The union scale of $7.12 a day was cut to $6.41 and the wages of other foundry employes, in proportion. The hiring rate will be $5.76.

Employers Deplore War for Open Shop

In a report adopted by the executive committee of the New Jersey States Chamber of Commerce, as the result of an investigation by the chamber's committee on industrial relations, it is said:

"A movement is now on foot which, misusing the name of 'open shop' and 'American plan,' is smashing labor organizations throughout the country by locking the unions out and forcibly deunionizing the workmen. Together with the abuses of unionism, this movement is destroying the constructive substance of unionism and stifling the just democratic aspirations of the workmen. It is undermining the confidence of labor in employers and ruining the foundation for co-operation between them. Campaigns of this nature are leading to oppression by employers and are playing into the hands of revolutionary elements.

"To summarize our findings and recommendations, the road of anti-union coercion as above explained appears to us to be dangerous. It ought by all means to be avoided. Only the other two roads—that of constructive achievement within the shop, or of constructive co-operation with labor organizations in an industry-wide scope, seem to us possible in the long run if disastrous results are to be avoided."

Corporation's 1921 Pension Outlay $947,879

An aggregate of $947,879.15 in pensions was paid to retired employes of the United States Steel Corp. and its subsidiary companies during the year 1921, according to the eleventh annual report of the United States Steel and Carnegie Pension Fund, just issued. This is $168,112.55 more than was disbursed in 1920 and greater than any year since the establishment of the fund in 1911. Participants numbered 3677. The total on the list at the beginning of 1921 was 2969, and 708 names were added during the year; while 240 were discontinued because of death or other causes, leaving 3437 active participants.

The total amount disbursed since the establishment of the fund in 1911 is $6,828,460.75. The disbursement in the first year was $281,457.37. The average age of the participants for the past 10 years has been 66.10 years; the average term of service 30.95 years, and the average monthly pension, $24.10. The beneficiaries make no contribution to the fund. The money is derived from a trust fund of $12,000,000 established by Andrew Carnegie and the United States Steel Corp.

Because so many of the corporation's activities are in the Pittsburgh district, a large proportion of the fund is distributed there. The Carnegie Steel Co. leads the subsidiary companies with $204,470.70, an increase of $35,754.91 over 1920. The Homestead Steel Works led all units of this company with $42,763.15, awarded its retired employes while the Edgar Thomson Works at Braddock was a close second with $42,593.18, and the old City Mills of the company was third with $27,837.89.

The other subsidiaries in the Pittsburgh district followed with these amounts disbursed for the year: American Steel & Wire Co., $185,201.45; American Sheet & Tin Plate Co., $125,404.20; National Tube Co., $106,205.47; H. C. Frick Coke Co., $80,485.99, and American Bridge Co., $75,194.33.

Men of the Iron Trade

Personal News of a Business Character Regarding the Men of Affairs of the Industry

FRED W. RAMSEY has resigned from the presidency of the Cleveland Metals Products Co., Cleveland, in order to devote more time to civic and philanthropic activities. Mr. Ramsey has been re-elected chairman of the campaign committee of the Cleveland Community Fund. He continues a director of the company and will maintain offices at the plant. L. S. Chadwick has been made president to succeed him. Mr. Chadwick, for nine years an engineer of the company, recently has been vice president in charge of manufacturing. Mr. Ramsey, born in Canada, entered the employ of the Cleveland Metals Products Co. when he was 27 years old. He is 45 now. His first job was sorting bolts and nuts. Since then his rise was steady. The company some time ago absorbed the Cleveland Foundry Co. The personnel of the organization, beside President Chadwick, is as follows: Chairman, F. E. Drury; vice president and general manager, E. A. Dodd; vice president and treasurer, Edwin Heina; vice president and director of manufacturing, G. L. Harrison; vice president and director of sales, J. C. Wallace; vice president, W. M. Clapp; secretary, W. E. Sheppard; and assistant secretaries, B. J. Greenough and P. T. Skove. Mr. Chadwick, the new president, is a graduate of Purdue university, was founder of the Chadwick Motor Co. which manufactured the Chadwick automobile and was inventor of a motor accessory produced by the Metal Products company.

Walter H. Radtke, for several years chief metallurgist of the Canton Sheet Steel Co., Canton, O., has resigned.

Henry D. Sharpe, president and treasurer of the Brown & Sharpe Mfg. Co., Providence, R. I., has been elected vice president of the Providence Journal Co.

George A. Seagrave has been elected president and Winfield S. Holman secretary and treasurer of the Danbury Mill Supply Co., Danbury, Conn., which recently was incorporated.

W. E. Bryan recently was appointed general purchasing agent of the Merchant Shipbuilding Corp., Chester, Pa., to succeed Griffith Coit, who died in Philadelphia, Dec. 16, at the age of 53 years, following a five years connection with the company. Mr. Bryan formerly Mr. Coit's assistant.

George A. Sagendorph, president of the Penn Metal Co., Boston, has been nominated as one of the three candidates for trustee of the University of Pennsylvania, the election for whom will be held on Feb. 20.

H. W. Wendt, president of the Buffalo Forge Co., the Buffalo Steam Pump Co., the George L. Squier Mfg. Co., and the Canadian Blower & Forge Co., is on a four months business trip to South America.

FRED W. RAMSEY

Daniel G. Head, formerly field representative in New England for the Federal Miniature Lamp division of the General Electric Co., is now sales manager for the Culver-Stearns Mfg. Co., Worcester, Mass.

G. W. Atkinson, formerly electrical engineer of the United States Armory, Springfield, Mass., has become superintendent of power and maintenance of the Gilbert & Barker Mfg. Co., West Springfield, Mass.

R. M. Wolvin, president of the British Empire Steel Corp., has returned to Halifax, N. S., from England and Germany, where he had gone in an endeavor to sell ore from the corporations Wabana mines.

Ralph C. Ringwald, vice president of the Standard Rail & Steel Co., St. Louis and Madison Ill., has resigned to engage in the oil business in Kansas City.

S. W. Wheelock has been appointed sales manager at St. Louis of the Carnegie Steel Co., the Illinois Steel Co. and the Tennessee Coal, Iron & Railroad Co., to succed W. W. Scott, who resigned to become general manager of sales of the Laclede Steel Co. Mr. Wheelock was transferred from New Orleans, where he held a similar position to the one he assumes at St. Louis. He has been connected with the United States Steel Corp. since 1901, and at one time was assistant sales manager at St. Louis. Dennis Crowley, formerly assistant sales manager at St. Louis, has been transferred to New Orleans to succeed Mr. Wheelock. W. W. Arpe, for some time connected with the St. Louis office, has been promoted to the position of assistant sales manager in succession to Mr. Crowley.

Richard G. Wood was elected president of the Alan Wood Iron & Steel Co., Philadelphia, at the company's annual meeting recently. Jonathan R. Jones was elected vice president. Both Mr. Wood and Mr. Jones had occupied these positions for many years prior to 1920. Two years ago they resigned these offices and Mr. Wood retired with the title of chairman of the board and Mr. Jones as vice chairman. After spending the spring of 1920 in the South, however, they returned to Philadelphia, and again participated in the activities of the company, and since the resignation of W. W. Lukens as president of the company a few months ago, had been handling the duties of their old offices. Other officers elected recently are; Vice president, Ledyard Heckscher; vice president and treasurer, Howard Wood Jr; vice president and assistant treasurer, Alan D. Wood; secretary, John W. Logan; assistant treasurer and assistant secretary, A. Markley Harry; and assistant secretary, J. H. Woodhead. At the same time, Howard Wood Jr. was elected president of the Upper Merion & Plymouth railroad, a subsidiary of the Alan Wood company.

Men of the Iron Trade

Personal News of a Business Character Regarding the Men of Affairs of the Industry

ROBERT W. WOLCOTT, of the sales department of the Bethlehem Fabricators, Inc., Bethlehem, Pa., has been appointed manager of the New Orleans branch of the Lukens Steel Co., Coatesville, Pa., succeeding the late James W. Porch, for 23 years representative of the Lukens company in that territory. Under Mr. Wolcott is the company's warehouse from which he will direct distribution of a full line of products in addition to handling mill shipments. The warehouse at 620-634 South Peters street, New Orleans. Mr. Wolcott was born in Sewickley, Pa., and attended Lehigh university from 1914 to March, 1917, when he entered the engineering section of the council of national defense. In September that year he enlisted in naval aviation, was commissioned ensign and was executive officer in a naval aviation detachment until January, 1919, when he entered the erection department of the Bethlehem Fabricators, Inc., Bethlehem, Pa., later being transferred to the sales department where he remained until Feb. 1, 1922.

Franklin B. Richards, a partner in M. A. Hanna & Co., is ill with pneumonia in a Cleveland hospital. His condition Monday was reported to be slightly improved.

Carl C. Brown has been appointed vice president and general sales manager of the Nichols Wire & Sheet Co., with headquarters at Kansas City, Mo. Mr. Brown formerly was general sales agent of the Gulf States Steel Co., Birmingham, Ala.

Herbert Vogelsang, for six years associated with the Hauck Mfg. Co., Brooklyn, has been placed in charge of the Philadelphia offices of the company which have been moved to 1726 Sansom street. The company manufactures oil burning appliances.

W. E. Hopton, of the Hopton Co., White Memorial building, Syracuse, N. Y., has been made selling agent in New York state with the exception of New York City and territory south of Albany, for the Atlas Car & Mfg. Co.

G. B. Wickersham, secretary-treasurer and director of the Muncie Steel Supply Co., has organized G. B. Wickersham & Co., Pittsburgh, to handle scrap and to conduct a general business as auctioneers, appraisers and liquidators. He will continue with the Muncie company.

Charles E. Sanders, general purchasing agent for the Emerson-Brantingham Co., Rockford, Ill., has resigned, effective March 1, and will be associated with his son, Raymond Y. Sanders, in the insurance business at 208 South La Salle street, Chicago.

H. G. Schaeffer, formerly assistant district manager at Chicago for the Continental Iron & Steel Co., has been appointed manager of a new department

ROBERT W. WOLCOTT

of the Reliable Iron & Metal Co., Peoria, Ill., in which the company will handle steel on a general wholesae brokerage basis.

Herbert Midgley, president and general manager of the Howard Bros. Mfg. Co., Worcester, Mass., has been elected president of the Employers Association of Central Massachusetts, and Frank H. Willard, vice president and general manager of the Graton & Knight Mfg. Co., and Douglas P. Cook, president and general manager of the Boston Pressed Metal Co., both of Worcester, Mass., have been made vice presidents.

R. T. Crane Jr., president of the Crane Co., Chicago, has been elected president of the Crane Enamelware Co., Chattanooga, Tenn., which has been formed through the merger of the Mutual Enamelware Co. and the Cahill Iron Works. He succeeds Frank H. Caldwell, president of both the Mutual and the Cahill companies. J. T. Berryman, Chicago, has been elected first vice president of the new company, J. J. Maloney second vice president and H. W. Powell secretary.

Joseph W. Powell, formerly with the Bethlehem Shipbuilding Co., has announced his retirement, March 4, as president of the Emergency Fleet corporation. On Sept. 4, 1921, Mr. Powell went with the Fleet corporation in a volunteer capacity, expecting to remain three months in an effort to assist Chairman Lasker in reorganizing the corporation. His stay, without salary, was extended another three months, which is up March 4. The press of his private affairs is given by Mr. Powell as the reason for his retirement.

Eben Hill has resigned as director and president of the Norwalk Iron Works Co., South Norwalk, Conn., which was founded by his father, Eben Hill, over 50 years ago, and this is the first time it has been out of the direct management of the Hill family.

Lester Sigourney, who started work for the New Departure Mfg. Co., Bristol, Conn., as an office boy, has been made secretary of the company. Charles B. Simmons, who a few years ago worked at the bench, has been elected a director of the company.

L. O. Smith has been appointed sales manager of the Midland Motor Cylinder Co., Ltd., Smethwick, near Birmingham, England. This company is one of the leading manufacturers of automobile cylinders, pistons, fly wheels, etc., in Great Britain. Mr. Smith also will be personal assistant to A. E. Pearce, joint managing director of the Midland company. Mr. Smith has been for many years associated with British engineering enterprises including Alfred Herbert, Ltd., machine tool manufacturers, Coventry; Dennis Bros., Ltd., and S. Smith & Sons, Ltd. The Midland Motor Cylinder Co., Ltd., also has appointed W. V. Thompson, 4 Jane street, Blythswood square, Glasgow, to be its representative in Scotland. Mr. Thompson will also represent the Birmingham Aluminum Castings Co., Ltd., Birmingham, this company being affiliated with the Midland Motor Cylinder Co.

Repair Needs

Guide Refractory Demand — Prices Steady—Lime Kiln Operators Buy

Pittsburgh, Feb. 7.—Buying of refractories to supply repair needs continues to feature this market. Sales are confined to lots of from one carload up to 50,000 or 100,000 brick. Occasionally a lot of 200,000 brick for ladle purposes is closed. The majority of refractory makers report a slackening in demand this first week in February. A few users are inquiring for three to six months requirements but the orders are contingent upon favorable action being taken by the board of directors on expansion plans. Some kilns are operating at 35 per cent of capacity while others are not so active. One or two plants are operating nearly 100 per cent for a short time only because some shipments in January depleted reserve stocks. Prices for the most part are unchanged. Concessions are appearing but this usually is the case in a market of this sort. Pennsylvania brick continues to be quoted at $30. Fire clay brick, Pennsylvania No. 1 grade, is bringing $34 to several makers, as low as $32 is being done and the maximum runs as high as $36 or $37. Occasionally a $30 price is made but usually such a quotation is surrounded by special circumstances. Magnesite brick is not all being sold in harmony with the quoted figures of $53 to $55, seaboard base, but those are the general quotations, since Australian magnesite is being almost universally used by eastern makers. On chrome brick $41 to $44 per net ton f.o.b. works, appears to represent the full spread of the market. Some brick business has developed from lime kilns, operators buying mostly in carload lots. Spang, Chalfant & Co. are among recent buyers of three or four carloads of brick for pipe furnaces, etc. Sizable business in all kinds of refractory material appears to be held up pending a reduction of transportation costs. Specifications on contracts from the United States Steel Corp., and other large users are limited at the present time.

Fire Clay Brick

(Per 1000 f.o.b. works)

Pennsylvania, No. 1	$32.00 to 37.00
Pennsylvania, No. 2	28.00 to 32.00
Ohio, No. 1	32.00 to 35.00
Ohio, No. 2	28.00 to 32.00
Illinois, No. 1	32.00 to 35.00
Illinois, No. 2	30.00 to 35.00
Kentucky, No. 1	32.00 to 35.00
Kentucky, No. 2	30.00 to 32.00
Missouri, high grade	37.00 to 42.00
Missouri, No. 2	28.00 to 32.00
Maryland, No. 1	32.00 to 40.00
Maryland, No. 2	27.00 to 30.00

SILICA BRICK

Pennsylvania	$30.00
Chicago	35.00 to 38.00
Birmingham	40.00

MAGNESITE BRICK

(Per Net Ton Seaboard Base)

9 x 4½ x 2½ ..... $53.00 to 55.00

CHROME BRICK

(Per Net Ton)

9 x 4½ x 2½ ..... $41.00 to 44.00

Shipping by River

From Pittsburgh District Gains in Favor—System Extended

Pittsburgh, Feb. 8.—Preparations are being made here by the Jones & Laughlin Steel Co. to make up and send down the rivers early in March one of the largest tows of steel products ever shipped by water. The tow, exceeding any previous barge movement by several thousand tons, will mark the opening of the spring season for the Jones & Laughlin company's barge line.

The company has delivered more than 500 freight carloads of its products in its steel barges to consumers in cities in the Ohio and Mississippi valleys, saving many thousands of dollars in transportation costs. Delivery by barge is said to be approximately $2 per ton cheaper than by rail.

The company sells its products for river transport on a delivered price laid down in the customer's warehouse, whether the customer is on the river, or some distance inland. An officer of the company states that large jobbers, wholesalers, manufacturers, and other users of steel in quantity scattered throughout the South and Southwest have been quick to see the advantages in this service, with the result that many orders have been placed for March delivery over the inland waterways system. Loss and damage in transit by water are less than by rail, he stated, and the time required in transit is about the same either way.

S. E. Hackett states, they have started to erect complete rail and river terminals. Cincinnati, Louisville and Paducah, Ky., Evansville, Ind., Nashville, Tenn., Clinton, Ia., Vicksburg, Miss., and Kansas City, Mo., he mentioned as among those which have been stirred to action, St. Louis, Cairo and Alton, Ill., Memphis, Tenn., New Orleans and several other cities already have modern river terminals, but are preparing to add equipment capable of handling heavy steel tonnages.

Invitations have been received by the Jones & Laughlin company from a number of trade bodies, chambers of commerce and other groups of business men and manufacturers to send a representative to consult with them an coordination of efforts in making improvements and procuring rivers service for their respective communities. With this end in view, Mr. Hackett, accompanied by his assistant, A. W. Herron Jr., and an engineer, will visit several southern cities.

Benzol Supply

Absorbed By Motor Fuel Users—By-Products Price Changes Minor

New York, Feb. 7.—Industrial demand for pure and 90 per cent benzol is showing a steady improvement, although trading is considerably under normal. Supplies scarcely are sufficient to meet demand, due to an almost inexhaustible volume of inquiry for motor fuel.

Demand for solvent naphtha is light and inasmuch as production depends upon the demand for benzol, supplies oftentimes are plentiful, such is the case at present. The situation in toluol is mostly the same, but there now appears to be sufficient demand to absorb most of the output of this product.

Prices remain steady, with pure benzol holding at 27 to 29 cents f.o.b. works, in tanks, and 32 to 35 cents in drums, and 90 cents benzol, at 25 to 27 cents, f.o.b. works, in tanks, and 30 to 33 cents in drums. The market on toluol is 28 to 30 cents, f.o.b. works, in tanks, and 33 to 36 cents in drums. Solvent naphtha is unchanged at 25 cents in tanks, and 28 to 31 cents in drums.

Trading in ball and flake naphthalene now is confined principally to small spot requirements. The larger users have for the most part covered all their current needs, and in addition, have contracted ahead in anticipation of the usual spring cleaning season. The market on naphthalene continues unchanged at 7 to 8 cents, f.o.b. works, for flakes, and 8 to 9 cents for balls. Demand for phenol is listless, with the government offering stocks at 12 cents, f.o.b. government warehouse, and the producers quoting around 15 cents.

With sellers of sulphate of ammonia well sold up over the first quarter, spot material virtually is out of the question. This situation is especially affecting foreign buyers who are inquiring for small quantities of spot material.

Coke Oven By-Products

Spot

Per Gallon at Producers' Plants in Tank Lots

Pure benzol	$0.27 to $0.29
Toluol	.28 to .30
Solvent naphtha	.25

Per Pound at Producers' Plants

Phenol	$0.15
Naphthalene, flake	$0.07 to $0.08
Naphthalene, balls	.08 to .09

Per 100 Pounds at Producers' Plants

Sulphate of ammonia	$2.40

(Prices on spot sulphate also quotable on business for delivery over next several months.)

Contract

Pure benzol	$0.27 to $0.29
Toluol	.28 to .30
Solvent naphtha	.25

Per Pound at Producers' Plants

Phenol	nominal
Naphthalene, flake	$0.07 to $0.08
Naphthalene, balls	.08 to .09

Per 100 Pounds at Producers' Plants

Sulphate of ammonia (12 months)	nominal

Inland Steel Co. Fails To Earn Dividends

The Inland Steel Co., Chicago, one of the first of the independents, involved in the proposed steel merger, to make public its statement of operating results for 1921 reports that net profits before dividends were $510,727 compared with $4,107,061 in 1920. After disbursing dividends of $1,013,964 the company had a deficit for the year of $503,237 and the total surplus as of Dec. 31 was $18,205,445. In the preceding year dividends to the extent of $2,763,905 were paid and the surplus for the year amounted to $1,343,155. Net earnings after charges for repairs and improvements and taxes totaled $1,728,031 compared with $6,066,560 in the preceding year. Smaller deductions from income for depreciation, bond interest and mineral exhaustion are shown in the statement. The comparative income account follows:

Income Account

	1921	1920
Net earnings, after repairs and taxes	$1,728,031	$6,066,560
Less:		
Depreciation	877,059	1,550,837
Mineral exhaustions	34,934	83,551
Bond interest	305,310	325,110
Total deductions	1,217,303	1,959,498
Net profits for year	510,727	4,107,061
Dividends	1,013,964	2,763,905
Deficit	503,237	*1,343,155
Total surplus	18,205,445	18,708,000

*Surplus.

The balance sheet of the company shows a strong position. Including $3,069,000 of victory bonds and other investments the company has current assets of $15,009,797 against current liabilities of $1,342,000, making net working capital as of Dec. 31, $13,667,786. One year before total current assets were $18,411,085 and net working capital $16,310,684. At the close of 1921 inventories were lower, cash was greater and bills receivable were less. At the close of 1920 inventories stood at $7,777,201, bills receivable at $4,601,124 and cash at $1,868,812. One month ago these same items were $7,191,000, $2,407,155 and $2,197,225 respectively.

During the year the bonded debt was reduced from $5,291,000 to $4,961,000. The value of land, plants and building was listed at $45,220,987 at the close of 1921 compared with $42,589,028 the previous year. General taxes accrued were $407,192 against $453,362 one year before.

Stockholders of the Inland Steel Co., Chicago, at their annual meeting Jan. 31 re-elected former directors and chose Gordon Battelle of Columbus, O., a director to succeed the late Elias Colbert. L. E. Block was made chairman of the board, P. D. Block president and E. M. Adams first vice president. Vice presidents are H. C. Jones, E. J. Block, J. W. Lees, W. C. Carroll and Charles R. Robinson. W. D. Truesdale was elected secretary-treasurer. The directors voted a dividend of 25 cents per share, payable March 1 to stock of record Feb. 10.

Midvale Deficit Grows In Fourth Quarter

Net earnings of the Midvale Steel & Ordnance Co. for the year ended Dec. 31, 1921, were $2,624,692 which is a drop of $18,299,953 as compared with the preceding year. According to figures based on quarterly reports the company incurred a deficit of $5,313,513 during the year, which compares with a balance of $12,371,298 in 1920 and a balance of $10,387,418 in 1919. The income report for the past two years is compared as follows:

	1921	1920
Net after taxes	$2,624,697	$21,924,650
Bond interest	3,005,622	3,073,531
Depreciation reserve	4,932,588	6,479,821
Deficit	5,313,513	*12,371,298

*Surplus.

The fourth quarter report which has just been made available shows an increase of $130,646 in the deficit over the preceding period, the total for the final period being $1,379,782. A comparison of the third and fourth quarter income accounts follows:

	Fourth Quar. 1921	Third Quar. 1921
Net after taxes	$828,358	$688,238
Bond interest	744,848	745,048
Balance	83,510	*56,810
Depreciation	1,463,292	1,192,326
Deficit	1,379,782	1,249,136

To Reorganize Company

The Locomobile company of America was placed in the hands of receivers Feb. 1, with Edmund S. Wolf, president of the First National bank, Bridgeport, and Colonel Elmer H. Havens, president of the Locomobile company as receivers under bonds of $100,000 each. The receivership petition, filed by three of the largest creditors, stated that the interests of banks and merchandise creditors, as well as stockholders, best can be served through a reorganization by means of a receivership. It further was claimed that the company is doing considerable volume of business and has about $500,000 cash on deposit. Colonel Havens said that the banking and merchandise interests and the present officers of the Locomobile company are in agreement that a receivership is the best solution to the problems of the company and that it is a natural step toward proper reorganization that should make possible the operation of the Locomobile plant upon a sound financial basis.

Schwab Urges Adoption of American Valuation

That we have American standards in everything but our tariff is the opinion of Charles M. Schwab, chairman of the Bethlehem Steel Corp., New York, which he expresses in a letter to J. E. Edgerton, president of the National Association of Manufacturers, New York. In Mr. Schwab's opinion the hour has come when American standards should be placed in our tariff laws, and the most simple and effective way of doing this, he states, is by substituting American standards of value for the present archaic standards of foreign values. This, he points out, is the essence of American valuation, which will do for our industries our people and our business, exactly what the gold standard did for currency. In addition to this, he says it will prevent the cheaper currencies of the world from saddling this country with economic stagnation.

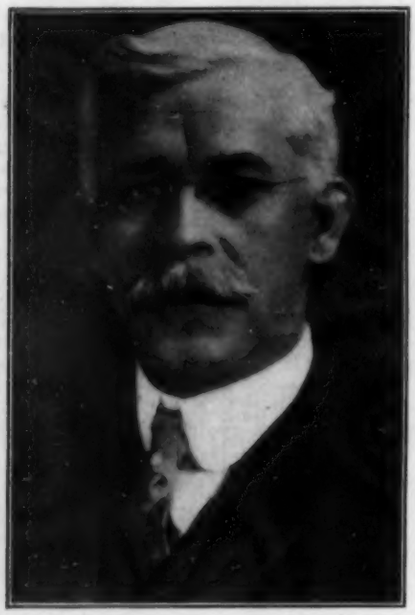
In his letter Mr. Schwab says: "Today we are confronted with a basic weakness in our tariff policy which is affecting, injuriously, the whole industrial fabric of the nation. Fluctuations in foreign exchange are playing havoc with wages, prices and orders. Because our present tariff laws were framed at a time when foreign moneys were normal, they are today actually inoperative as far as protecting labor and industry, or yielding revenue are concerned."

Two examples which illustrate this statement are pointed out by Mr. Schwab. He states an ounce of gold today pays the American worker for 17.22 hours of labor as against 50.16 hours in Great Britain, 95.5 hours in Japan, 117.31 hours in France and 201.55 hours in Germany.

"In 1915 it required the work of 5000 men for one day to make 1000 tons of steel rails," Mr. Schwab says. "Let us suppose that today an American railroad placed an order for 50,000 tons of rails in Belgium, Germany, or England, because these rails might be bought cheaper abroad than at home. This would mean that 5000 men in our own country would be idle for 50 days. It would mean that several thousand railroad employes would have less work because the railroads would be deprived of hauling these rails and the raw materials such as coal, coke, iron, etc., which comes from the mines to the mills. It would mean that thousands of miners would have less work if the product of their labor were not used by the mills. It would mean that the workers of the mines, mills and railroads would have less money to spend for the necessities of life with the baker, the grocer or the retailer. This tendency to buy abroad at the expense of our own country is short-sighted economy."

Obituaries

CHARLES LEWIS TAYLOR, associate of Andrew Carnegie, president of the Carnegie Hero Fund commission and one of the first steelmakers to produce soft steel for the production of pipe, nails, ship plate and structural steel, died Feb. 3 at his winter home in Santa Barbara, Cal., following a long illness. He would have been 65 years old April 3. In addition to his work in applying mild steel to these mill products, he designed steel cars and developed steel for their manufacture, pioneering in an industry which today is one of the largest consumers of steel.



CHARLES L. TAYLOR

Mr. Taylor, who was born in Philadelphia and who was graduated from Lehigh university with the degree of metallurgical engineer in 1876, began his career in that year as assistant chemist of the Cambria Iron Co. in its works at Johnstown, Pa. Later he was made assistant superintendent of blast furnaces and in 1880 went to Pittsburgh as chemist for the Pittsburgh Bessemer Steel Co. remaining after its merger with the Carnegie interests. Two years later he became superintendent of the Homestead steelworks and after five years in that capacity was succeeded in 1887 by Charles M. Schwab, now chairman of the Bethlehem Steel Corp. For two years Mr. Taylor was general manager of the Hartman Steel Co., another Carnegie interest. Then in 1890, and until 1892, he was assistant secretary of Carnegie, Phipps & Co., Ltd., and in 1893 became assistant to the president of the Carnegie Steel Co., Ltd. He gave up active work in the company in 1901 when the Carnegie Steel Co. became a subsidiary of the United States Steel Corp. and he became chairman of the Carnegie relief fund. In 1904 when the Carnegie Hero Fund commission was founded, he was made president. He was secretary of the Carnegie Veterans association, an organization of partners of Andrew Carnegie; trustee of Lehigh university, Carnegie Institute of Technology, the Carnegie Library, and other educational and philanthropic institutions; and a member of several clubs and associations.

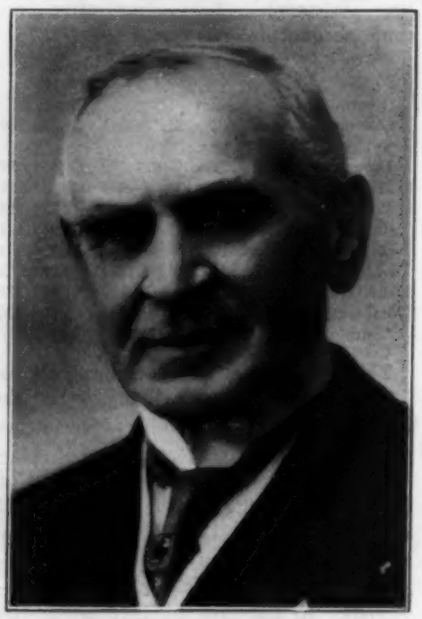
Carnegie's Opinion of Charles L. Taylor

I FOUND the president for the Hero Fund in a Carnegie veteran, one of the original boys, Charlie Taylor. No salary for Charlie—not a cent would he ever take. He loves the work so much that I believe he would pay highly for permission to live with it. He is the right man in the right place.

I got my revenge, one day upon Charlie, who was always urging me to do for others. He is a graduate of Lehigh university and one of her most loyal sons. Lehigh wished a building and Charlie was her chief advocate. I said nothing, but wrote President Drinker offering the funds for the building conditioned upon my naming it. He agreed, and I called it "Taylor Hall." When Charlie discovered this, he came and protested that it would make him ridiculous, that he had only been a modest graduate and was not entitled to have his name publicly honored, and so on. I enjoyed his plight immensely, waiting until he had finished, and then said that it would probably make him somewhat ridiculous if I insisted upon "Taylor Hall," but he ought to be willing to sacrifice himself somewhat for Lehigh. If he wasn't consumed with vanity he would not care how much his name was used if it helped his alma mater. Visitors who may look upon that structure in after days and wonder who Taylor was may rest assured that he was a loyal son of Lehigh, a working, not merely a preaching, apostle of the gospel of service to his fellow men, and one of the best men that ever lived. Such is our Lord High Commissioner of Pensions.

—From Autobiograhy of Andrew Carnegie

Col. Jeremiah J. Sullivan, chairman of the Central National Bank Savings & Trust Co., Cleveland, died Feb. 2 at his home in that city following a brief illness of influenza. He was in his seventy-seventh year. He was interested in industrial and marine enterprises in northern Ohio, having assisted numerous ventures during their struggling periods. He was a veteran of the civil war, having enlisted in the Union army when 17 years old. After the war he entered the grocery business and later became a hardware merchant. In 1879 he was elected state senator. President Cleveland in 1887 named Colonel Sullivan state bank examiner for northern, Ohio which he resigned three years later to go to Cleveland and organized the Central National bank. He served 10 years as cashier and in other offices and became president in 1900. Five years later he organized the Superior Savings & Trust Co. and was president of that. The two organizations were merged a year ago



COL. J. J. SULLIVAN

and he was elected chairman and his son, C. E. Sullivan, was elected president. Colonel Sullivan prominent in civic affairs, was president of the National Board of Trade, had been president of the Ohio Bankers association and was active in securing the federal reserve bank for Cleveland. He was a staunch supporter of all efforts aimed at the upbuilding of the American merchant marine.

John H. Streeter, secretary-treasurer of the Riverside Iron Works, Chicago, died Jan. 26 at his home in Chicago.

Robert Knight Dana, who practically all his life was in the copper wire business and until recently was vice president of the Independent Lamp & Wire Co., New York, died at his home in New York, Feb. 1, of pneumonia, aged 75 years.

Frank C. Osborn, civil engineer associated with the Osborn Engineering Co., Cleveland, died suddenly Jan. 31 at his home in Cleveland. He was 64 years old. He was a member of the Cleveland Engineering society and in the American Society of Civil Engineers.

John G. Nordeen, founder of the Nordeen Iron Foundry, Vancouver, B. C., died Jan. 28. He went to Vancouver from Kansas City 15 years ago and his small foundry developed into the present substantial plant on Grand avenue.

James Shand, for many years superintendent of the Dodge Mfg. Co., machinery manufacturer, at Toronto, died suddenly Jan. 30. He was 60 years old and a native of Scotland. He went to Canada when a young man and had always been associated with machinery production, at one time being with the A. R. Williams Machinery Co.

Colgate Hoyt, a director and member of the executive committee of the United States Cast Iron Pipe & Foundry Co., died recently at his home in Center Island, N. Y. He was 73 years old and was a native of Cleveland. He also was a director of the Canada Copper Co. and the Cuba Copper Co. At one time he was president of the Automobile Club of America.

Guy S. Eldredge, one of the victims of the Knickerbocker theater disaster in Washington, D. C., Jan. 28, was for three years a special efficiency engineer in the Worcester, Mass., and New Haven, Conn., offices of the American Steel & Wire Co. Before going to Worcester in 1917, he was the Pacific coast sales manager of the United States Steel Products Co. About two years ago he became manager of the San Francisco warehouse of the Winchester Repeating Arms Co., New Haven, Conn., which position he left a few months ago to become an engineer in the government bureau of efficiency in Washington. He was 42 years old and a native of Salt Lake City.

John R. Back, for the last 10 years secretary of the employment department of the Worcester, Mass., branch of the National Metal Trades association died at his home in that city, Jan. 24, at the age of 70 years. When he was 13 years old he entered the Crompton Loom works, later becoming superintendent of the F. E. Reed Co., and then the Prentice Bros., both builders of lathes. With the consolidation of the Reed-Prentice Co., he continued as superintendent, resigning in 1912.

William Arthur Bostwick, president of the International Nickel Co., and one of the three metallurgists active in its organization and development, died Feb. 4 in Lawrence Park, N. Y., at the age of 48 years. Mr. Bostwick was associated with the late Ambrose Monell and the late E. F. Wood in the development of the company. All three previously had been interested in the use of nickel in steel when they were metallurgists with the Carnegie Steel Co. Mr. Bostwick, a graduate of the school of metallurgy of Columbia university, was made chief of the metallurgical department at the Homestead steelworks in 1898. In 1903 he became chief metallurgist of the Carnegie Steel Co. In 1911 he joined Mr. Monell, then president of the International Nickel Co., as his assistant. He was elected president in 1917, succeeding Mr. Monell who entered war work. He was a member of the American Society for Testing Materials, the American Society of Mining and Metallurgical Engineers, the British Iron and Steel institute and the American Iron and Steel institute.

Americans Plan To Build Many Ocean Liners

New York, Feb. 7.—American steamship owners are planning to have built immediately at least a dozen seagoing vessels, nearly all passenger ships, according to plans filed with the American bureau of shipping. This was announced by the bureau on the occasion of the annual meeting, Jan. 31. During 1921 but one new contract for a seagoing vessel was placed with an American shipyard to be built according to supervisory plans of the bureau. "This was the low-water mark in American shipbuilding," declared the bureau in its official statement. "But the prospects for 1922 are much brighter."

Not all the shipbuilding contracted for in American yards comes under the observation of the American bureau. Practically all the vessels built for foreign account are built according to British Lloyds or some foreign classification society, and the American bureau has no official knowledge of the contracts. Not all the American-owned vessels are classified by the bureau. When the bureau was reorganized in 1916, under its present management, only 8½ per cent of American classified vessels were under its supervision, but today approximately 80 per cent of all American classified tonnage has been surveyed by this American institution. It was not until last year that the federal government made the bureau the official classifications institution.

At the annual meeting all officers, including Stevenson Taylor, president, and Capt. C. A. McAllister, senior vice president, were re-elected. G. P. Taylor was made a vice president to succeed the late Commodore Bertholf, combining that office with his former position of treasurer. William F. Gibbs and Theodore Wells were added to the technical committee on naval architecture. A new subcommittee on internal combustion engines was added to the engineering committee, and it will consist of Dr. C. E. Lucke, and Messrs. Rutter, Cooke and West. The bureau has recognized the growing importance of this type of propulsion.

Boiler Has Unusual Power

Installation of one of the largest boilers in the world of its type has been completed by the D. Connelly Boiler Co., Cleveland at the central heating plant of the Detroit Edison Co., Detroit. The boiler can covert 24,000 gallons of water into 200,000 pounds of steam hourly. This steam is sufficient to heat 1000 residences. The boiler is said to be the only one in existence of 2982 horsepower. It has 2184 tubes. The company also has orders from the California Edison Co., Los Angeles, Cal., for six 850 horsepower boilers.

Furnace Sets New Record

All previous records of blast furnace A at the River Rouge plant of the Ford Motor Co., for production of pig iron and the coke required per ton of iron were broken during the month of January. The total of pig iron made was 18,728 gross tons which was an average of 604 tons per day. Coke consumption per ton of iron was 1791 pounds. Of the iron produced 1157 tons was foundry pig iron averaging 3.50 per cent silicon and the balance was malleable iron with silicon ranging from 1.00 to 1.87 per cent. The best day's run was 701 tons.

Here and There in Industry

Live Information Which Records the Expansion of Various Lines of Productive Enterprise

FORMATION of the Cadillac Machinery Co., Boydell building, Detroit, has been effected by the personnel of the Cadillac Tool Co. which has been dissolved. The men, C. L. Campbell, C. E. French, L. E. Bugbee, C. G. Valentine and R. J. Borneman, were associated with the late P. M. Fowl, president and founder of the Cadillac Tool Co. and are continuing the business as requested by him. They will represent the same companies served by the Cadillac company and will cover the same territory. C. L. Campbell is president of the new organization.

* * *

THE Hatboro Foundry Co., Hatboro, Pa., has been reorganized with the following officers: President, W. W. Wilgus; secretary, Kenneth Farnsworth; and assistant secretary and treasurer, Charles Schwab.

* * *

COMPLETION of a large gas producer main and connection for the McKeesport Tin Plate Co., McKeesport, Pa., and of a suction and distributing main with header lines and latterals with supports for the Grasselli Chemical Co.'s plant at Chicago, is announced by the Gerstner Boiler Works, Inc., Pittsburgh.

* * *

THE W. H. Chapman Co., Middletown, Conn., maker of hardware, has elected the following officers: President, Bayard Barnes, LeTour de Peitz, Switzerland; vice president, Sidney Hosmer, Boston; secretary and treasurer, Charles W. Warner.

* * *

HENNING BROS. & Smith, Inc., Engert avenue at Eckford street, Brooklyn, has been formed to supply nonferrous foundries with brass and composition ingot, scrap metals, babbitt, solders, etc. Henry Henning Jr., and Gustav Henning together with M. H. Smith; president of Smith & McCrorken, compose the new company.

* * *

THE Conemaugh Iron Works Co., a new corporation with offices at Latrobe, Pa. and works at Blairsville, Pa. has purchased the holdings of the Blairsville Iron Works. The new company will specialize in split ingot molds, stools and miscellaneous gray iron castings.

* * *

G. B. WICKERSHAM & CO. has been organized by G. B. Wickersham, secretary-treasurer and director of the Muncie Steel Supply Co., with which he will continue, to handle scrap and to act as auctioneers, appraisers and liquidators. Efforts are being made now to find a suitable site for a scrap yard and a warehouse for the handling of steel and steel products.

* * *

INCORPORATION of the Tyrrell Patents Co. at Seattle for $350,000 has been effected by James C. McKnight, W. E. Avis Jr., William Tyrrell, H. F. Markey, W. E. Robinson and A. H. Holland. The purpose is to take care of foreign patents under the Tyrrell process of smelting Pacific coast blast sand iron ores recently described in THE IRON TRADE REVIEW. The new company does not plan any immediate development.

* * *

DETROIT Copper & Brass Rolling Mills, Detroit, elected the following directors at the annual meeting recently: A. H. Buhl, L. D. Buhl, C. B. Davis, F. J. Hecker, F. H. Hoffman, L. H. Jones, R. P. Joy, and A. H. Buhl. These then elected the following officers: L. H. Jones, president and general manager; R. P. Joy and A. H. Buhl, vice presidents; and A. J. Peoples, secretary-treasurer. Alexander Henderson was appointed works manager.

* * *

CONSOLIDATION of the Superior Roller Ball Bearing Co., formerly of Canton, O., with the Vervoort Ball Bearing Co., East Eighteenth street, near Superior avenue, Cleveland, under the name of the Vervoort company, has been announced by Henry G. Tremmel, secretary and general manager of the consolidated company. Other officers of the company are: President, J. T. Koepke; vice president, J. V. Zupnik; and treasurer, F. W. Watson. The Superior company before the consolidation had been owned by Mr. Tremmel and Henry C. Boester. The new organization is building a plant on Green road, near the Belt Line railroad, Cleveland, which is expected to be ready for occupancy in the spring.

* * *

INCORPORATED under the laws of Pennsylvania, the Keystone Fuel Corp. has established headquarters in the Park building, Pittsburgh. C. R. Anthony is president and treasurer while H. E. Maser, formerly with the Canonsburg Gas Coal Co., is vice president and secretary. The Keystone corporation, in addition to dealing in coke, will act as selling agent for the Delmont Coal Co., the Atco Coal & Coke Co., and the Sullivan Coal Mining Co.

* * *

ELECTION of R. T. Crane Jr., president of the Crane Co., Chicago, as president of the Crane Enamelware Co., Chattanooga, Tenn., followed that company's incorporation and purchase of the Mutual Enamelware Co. and the Cahill Iron Works. Frank H. Caldwell, president of both merged companies, resigned after 52 years active business connections. J. T. Berryman is first vice president, J. J. Mahoney second vice president and H. W. Powell secretary of the new company.

* * *

REORGANIZATION of the Doullut & Williams Co., Inc., New Orleans, engineers and general contractors, has been completed with the consolidation under that name of Doullut & Williams, Inc.; the Southern Lighterage & Wrecking Co., Inc.; and the Shell Beach Land & Improvement Co., Inc. W. Horace Williams is president and general manager of the new company, Paul Doullut, vice president and J. P. Ewin, secretary-treasurer and managing engineer. Mr. Williams and Mr. Ewin will manage the engineering department; steel and other construction will be under C. G. Cappel; municipal and highway work will be under R. E. Gosa; the wharf and dock department will be in charge of L. C. Smith; the electrical department under Frank T. Copp; the statistical department in charge of H. J. Lane; and the lighterage and wrecking department under A. T. Gomila. The company, one of the largest and most complete in the South, has discontinued its shipbuilding plant.

German Export Inflation Stops

Seven Months Total Shows the Peak Was Passed in October with 246,115 Metric Tons of Iron and Steel—Imports Follow Same Tendency—English Sale of Scrap to United States Retarded

LONDON, Jan. 28.—Statistics of German exports and imports of iron and steel for seven months in 1921 indicate that the peak in the trade was reached in October when 246,115 metric tons of iron and steel products were shipped abroad from Germany. The total for the period is 1,415,683 metric tons, the figures for individual months being as follows:

	Metric tons
May	129,847
June	162,297
July	177,773
Aug.	240,071
Sept.	225,331
Oct	246,115
Nov.	234,249

On the basis of the foregoing, estimating December at 240,000 tons and January to April at 480,000 tons indicates a total for the year 1921 of 2,185,633 tons is indicated compared with 1,750,608 tons in 1920.

Imports of German iron and steel also show significant increases during 1921. In May the total imports were 43,880 tons rising gradually to 146,695 tons in October. Imports for the seven months are as follows:

May	43,880
June	47,013
July	55,104
Aug.	70,008
Sept.	106,519
Oct.	146,695
Nov.	94,222

Imports of semifinished steel particularly are significant, amounting to 16,262 tons in September, 25,992 tons in October and 11,746 tons in November. Imports of scrap also are heavy totaling to 25,465 tons in September. 48,601 tons in October and 39,093 tons in November. Bar imports were 37,263 tons in September, 35,617 tons in October and 18,889 tons in November.

These heavy imports tend to indicate that Germany has been exceeding the legitimate export capacity based on present production. Considering the internal needs of the country, it is doubtful if Germany's export surplus exceeds 2,225,000 tons a year at present whereas exports recently have been at an average rate of 2,860,000 tons per year on a production of about 8,000,000 tons. That German exports have been abnormally stimulated is further indicated by the complaints of inland consumers who recently have been putting pressure to bear on the government to have their requirements given more consideration.

Details of German iron and steel exports for the seven months May to November inclusive are given in the accompanying table. As these figures show, bars constitute the heaviest item reaching 52,022 tons in October, with pig iron and scrap a close second amounting to 50,381 tons in October, and rails third amounting to 26,329 tons in October. In contrast with Great Britain and the United States tin plate exports are meager as also are the exports of wire products.

German Exports of Iron and Steel in 1921

In Metric Tons of 2205 Pounds

	May	June	July	Aug.	Sept.	Oct.	Nov.
Pig iron, ferroalloys and scrap	4,777	11,577	11,934	22,186	27,318	50,381	38,976
Cast iron pipe	1,897	3,098	3,451	3,831	1,987	3,304	1,947
Rolls	1,134	1,324	1,483	1,564	1,047	1,611	1,788
Cast machine parts	644	770	789	858	718	611	649
Other castings	3,484	4,198	5,381	5,296	5,815	6,421	6,076
Blooms, billets, sheet bars	2,234	2,790	2,310	5,888	4,307	3,767	2,513
Bars and bands	26,258	37,225	26,958	53,501	48,325	52,022	51,583
Plates and sheets	13,623	12,312	16,256	21,751	18,950	22,340	24,616
Tin plate	1,744	1,732	3,024	2,888	3,168	3,492	2,779
Wire, rolled and drawn	8,214	14,532	16,252	17,884	16,431	15,730	13,491
Pipe	6,466	4,841	11,778	9,000	11,214	8,014	9,845
Rails	18,968	22,448	22,155	48,829	37,617	26,329	29,825
Wheels and tires	6,697	5,316	6,378	6,728	5,378	4,422	4,316
Forgings	6,651	9,091	11,027	8,409	8,387	9,308	9,517
Structural steel	5,440	5,273	7,315	7,000	3,939	4,613	4,625
Boilers	1,695	2,915	2,969	2,197	1,876	1,523	1,664
Anchors, hammers, etc.	226	375	391	411	391	447	391
Agricultural implements	2,888	2,948	4,311	3,756	3,391	3,369	2,761
Tools	1,480	2,428	1,968	2,090	1,955	2,346	2,634
Screws, bolts, nuts, etc.	1,899	2,223	2,418	2,588	2,471	4,001	3,369
Axles	124	186	178	217	201	157	147
Railway and auto springs	110	106	195	136	80	98	82
Wire rope	3,089	3,533	4,560	3,831	3,785	4,159	3,536
Wire nails	3,367	3,840	6,391	7,119	7,284	6,494	6,310
Other wire products	261	504	468	579	451	634	578
House hardware	2,026	2,173	2,481	2,582	2,697	3,589	3,128
Chain	411	602	346	438	352	408	393
Miscellaneous	3,940	3,939	4,709	4,489	5,797	6,385	6,710
Totals	129,847	162,297	177,773	240,071	225,331	246,115	234,249

Exchange Retards Scrap Sale To America

London, Jan. 28.—Although the London dealers who have been chiefly concerned state that negotiations are continuing with a Pennsylvania independent steelmaker for the purchase of about 250,000 tons of British scrap shellcases, it is believed now that the consummation of this transaction may be indefinitely delayed. Since the negotiations were opened three new factors have developed, namely, the unforeseen rise in sterling exchange, the drop in the price of heavy melting steel in Philadelphia and other eastern markets, and an increase in the price of this material in the British markets, owing partly to increased steelmaking activity in South Wales.

The rise in sterling exchange has had the effect of increasing the dollar price of British scrap considerably. At the time the negotiations first were opened sterling stood at about $3.80 for £1. Today the quotation is approximately $4.22. This increase of 42 cents in £1 is 11 per cent. Thus British scrap at £2 10s 0d, which was equivalent to $9.50 a gross ton, is now $10.55. In the meantime the British market has stiffened somewhat to around £2 15s 0d ($11.60) to £3, with some few sales above this range. In the meantime heavy-melting steel in Philadelphia declined from around $13 at the end of November to $11.50 on the last day of December. On the latter basis there is no margin for covering freight, insurance, etc., on British scrap. The rise in exchange and the slight stiffening of the British market having combined to wipe out the margin of about $3.00 a ton which existed a month or so ago, and which at that time was more than sufficient to cover a freight of 12 shillings. The dollar value of the freight also has increased from about $2.30 to $2.55. The holders in Great Britain probably would still be able to sell on the sterling basis quoted in November, ignoring local conditions in view of the desirability of a large export contract.

January Iron Output Gain Small

Production Shows Only 3029-Ton Increase Over December—Merchant Iron Slumps while Nonmerchant Iron Improves—Stacks, with Total of 127 Operating on Jan. 31, Is a Gain of Four Over December

LITTLE improvement was shown in the coke and anthracite pig iron production of January which totaled 1,645,804 gross tons, as compared with 1,642,775 tons made during December. The gain is but 3029 tons, a strikingly low figure in view of the fact that both January and December were 31-day months. The January figure now stands as the highest in 11 months, being second to the February, 1921, output of 1,929,394 tons.

Activity of blast furnaces during January continued to show improvement and with 127 operating on Jan. 31, showed a gain of four furnaces over the 123 operating on Dec. 31. The gain of December active stacks over November was three stacks.

MONTHLY PRODUCTION

	1922	1921	1920
January	1,645,804	2,414,753	3,012,373
February	.....	1,929,394	2,984,257
March	.....	1,594,866	3,375,768
April	.....	1,190,751	2,752,670
May	.....	1,215,272	2,991,825
June	.....	1,064,007	3,046,623
Total 1st half..	1,645,804	9,409,043	18,163,516
July	.....	864,642	3,043,918
August	.....	954,901	3,145,536
September	.....	985,795	3,124,308
October	.....	1,234,450	3,288,341
November	.....	1,414,958	2,935,081
December	.....	1,642,775	2,700,268
Total 2nd half..	.....	7,097,521	18,237,452
Grand total...	1,645,804	16,506,564	36,400,968

Merchant pig iron produced during January was 362,008 tons which, compared with 372,000 tons in December, was a dropping off of 9992 tons. Reduced to an average daily basis, the January merchant output was at the rate of 11,677 tons per day or a loss of 323 tons from the 12,000-ton daily output made during the preceding month. Nonmerchant and steelworks furnaces made a total of 1,283,796 tons during January and registered an improvement of 13,021 tons over the 1,270,775 tons of December. On an average daily basis, January nonmerchant production was at the rate of 41,413 tons, which compared with 40,992 tons during the month before was an increase of 421 tons. These production figures indicate a falling off in merchant output with a noticeable gain in the favor of nonmerchant output, the gain of the latter more than offsetting the curtailed merchant operations.

AVERAGE DAILY PRODUCTION

	1922	1921	1920	1919	1918
Jan.	53,090	77,895	97,172	106,654	77,523
Feb.	.....	68,906	102,904	105,270	82,794
Mar.	.....	51,447	108,895	99,614	103,548
Apl.	.....	39,691	91,754	82,479	109,112
May	.....	39,202	96,510	67,991	111,351
June	.....	35,466	101,533	70,467	110,538
July	.....	27,892	98,190	78,200	109,954
Aug.	.....	30,802	101,468	88,453	108,983
Sept.	.....	32,857	104,143	82,692	113,774
Oct.	.....	39,821	106,075	60,142	112,335
Nov.	.....	47,165	87,836	80,244	111,595
Dec.	.....	52,992	87,105	84,711	110,602
Ave.	53,090	45,223	99,456	83,910	105,290

Production of both merchant and nonmerchant furnaces during January was at the rate of 53,090 tons per day. This daily rate as compared with the 52,992-ton rate for the previous month, was a gain of 98 tons per day.

On the last day of January 127 blast furnaces were active as compared with 123 operating on the corresponding day of the preceding month, or a gain of four furnaces. During the month three merchant stacks were blown out and none blown in. Eight nonmerchant and steelworks stacks were blown in and only one blown out, giving a net gain of seven furnaces of this class. These figures emphasize the increase in nonmerchant iron production and the decrease in merchant production. Of the total number of stacks active on the last day of January 35 were merchant and 92 were nonmerchant. On the last day of the month the Steel corporation was operating 52 furnaces as compared with 51 on the last day of December and 52 on Nov. 30.

DIVISIONS OF PRODUCTION

1921	Merchant	Non merchant	Spiegel	Ferromanganese	Other ferro
Jan.	474,135	1,940,618	2,542	20,960	4,950
Feb.	338,383	1,591,011	11,566	17,447	4,067
Mar.	276,559	1,318,307	19,746	17,682	3,222
Apl.	238,539	952,212	14,744	13,266	3,163
May	215,703	999,569	2,379	6,853	4,553
June	178,854	885,153	....	4,536	6,090
July	141,326	723,316	4,015	1,509	3,178
Aug.	134,491	820,410	....	3,878	....
Sept.	157,728	828,067	....	3,289	35
Oct.	218,990	1,015,460	....	3,902	990
Nov.	304,535	1,110,423	....	3,525	1,065
Dec.	372,000	1,270,775	....	3,847	1,064
Tot'l	3,057,243	13,455,321	55,042	100,694	32,377
1922 Jan.	362,008	1,283,796	1,230	3,161	825

During January, 1230 tons of spiegeleisen was produced while none was made during the previous month. Ferromanganese with a total of 3161 tons was a loss of 686 tons from the 3847 tons of December.

Another new blast furnace was added to the total for the country on Jan. 16 when the new 600-ton stack of the Trumbull-Cliffs Furnace Co., Warren, O., was lighted for the first time.

Furnaces blown in during the month were: In Ohio: Sarah, Kelly Nail & Iron Co.; Upson, Upson Nut Co.; Portsmouth, Whitaker-Glessner Co.; and the new Warren, O., stack of the Trumbull Cliffs Furnace Co. In Pennsylvania: One New Castle, Carnegie Steel Co.; and Eliza No. 6 and Aliquippa No. 4, Jones & Laughlin Steel Co. In Colorado: Minnequa D, Colorado Fuel & Iron Co.

Stacks blown out during the month were: In Ohio: Jisco, Jackson Iron & Steel Co. In New York: Donner No. 2, Donner Steel Co. In Alabama: One Woodward, Woodward Iron Co. In Michigan: Detroit A, M. A. Hanna & Co.

JANUARY PIG IRON

	Number of stacks	Number in blast last day of month: January	December	Total tonnage made: Merchant	Nonmerchant	Totals: January	December
Pennsylvania	161	50	47	78,892	507,481	586,373	594,964
Ohio	80	31	28	109,599	322,908	432,507	417,918
Alabama	43	10	11	63,895	57,172	121,067	115,632
Virginia	19	..	..	.....	.....	.....	.....
New York	26	9	10	50,230	60,637	110,867	126,525
New Jersey	4	1	1	4,642	.....	4,642	5,026
Illinois	26	9	9	33,207	120,435	153,642	140,261
Colorado	6	2	1				
Indiana	16	8	8	15,561	156,143	171,704	178,582
Maryland	6	1	1				
Wisconsin	6	1	1				
Kentucky	7	1	1				
West Virginia	5	2	2	.....	35,901	35,901	33,965
Tennessee	14	1	1				
Washington	1	..	..				
Georgia	2	..	..				
Texas	1	..	..				
Minnesota	3	..	..	5,157	18,728	23,885	24,991
Michigan	3	1	2				
Missouri	1	..	..				
Spiegel and ferro—all states	..	..	..	825	4,391	5,216	4,911
Totals	430	127	123	362,008	1,283,796	1,645,804	1,642,775

Purchases of Tools Are Limited

Machinery Orders Are Few and Small but Influx of Inquiries Brighten Rather Gloomy Market—Secondhand Tools Are Preferred by Buyers as New Equipment Prices Continue To Be Maintained

BUYING of machine tools and factory equipment still is confined to single units. In the past week sales involving more than one tool were extremely rare and practically no outstanding business was done. Even the orders which were placed were for secondhand machinery practically in all cases and the only cheerful feature of the week's developments has been the continued influx of inquiries reported in all market centers. These continue to be received at a surprising rate, and while most of them are for single machines, if business results on the majority the trading done will aggregate a sizable total.

There was little of interest in the week's sales. The Delaware, Lackawanna & Western railroad placed orders for several tools, but other railroad buying was insignificant. Paper mills are reported as having been tool purchasers in the New England district. Dealers in Pittsburgh appear to have been busier than those in other sections, but in practically all instances, single tool sales ruled. It is interesting to note that all bids on the list for the Western Penitentiary, Pittsburgh, have been rejected and buying of this equipment will be done piece by piece.

New inquiries continue to be received at a great rate. These indicate that while users are not actually buying now, their prospective demands are large and dealers generally are confident that buying cannot be much further postponed. A Pittsburgh user, who purchased some equipment during the week, still has an inquiry out for six-inch lathes.

Auctions and sales of surplus equipment by plants in general, have resulted in considerable secondhand machinery being thrown on the market, and as a result of the fact prices for new machine tools are being held to the quoted levels, used equipment is moving in a considerably greater volume than the new. While prices for new tools are being held such is not the case with secondhand tools as in practically all transactions noted, buyers have been able to make their own prices.

The market for cranes and allied equipment continues dull. During the week Lansing, Mich., bought a 75-ton gantry crane. Two locomotive cranes were disposed of by the Brown Hoisting Machinery Co., the equipment to be shipped to South America. The West Penn Power Co., Pittsburgh, has appropriated $6,000,000 for power plant equipment, but it is understood no cranes will be purchased.

Machinery Demand Reflects Business Stagnation

NEW YORK, Feb. 7.—Placng of orders for a few machines by the Delaware, Lackawanna & Western railroad, represents the outstanding business in the eastern equipment market. These orders were divided between two sellers and involve tools which were issued in connection with the list closed on about the first of the year. Little or nothing is being done by the other eastern roads. The Henesy-Mann Structural Co., Buffalo, is in the market for a cold saw cutting-off machine.

Outstanding among crane awards of the past week are a 75-ton gantry crane for Lansing, Mich., and three grab-bucket electric cranes for the Aetna Portland Cement Co., Detroit, both orders going to the Whiting Corp., Harvey, Ill. The first order is said to have been placed directly by the city of Lansing, while the second was awarded through S. Firestone, consulting engineer, Rochester, N. Y. The Cement company's cranes are for installation in a new plant at Essexville, Mich. The Lamson Co., Boston, which has been figuring on an electric overhead crane, is now said to be considering a used crane.

Current inquiries include a 15-ton electric crane, with 34-foot span, and a 10-ton single leg gantry crane, with 19-foot span, for the Flat Rock Development Ford Motor Co., Flat Rock, Mich. Three alternates are specified. The inquiry is being handled by Stone & Webster, Boston. Other inquiries include a 5-ton crane with 31-foot span for the General Engineering & Management Corp., 141 Broadway, and two 10-ton electric cranes, with 90-foot span. Locomotive crane orders include a 30-ton crane, with 60-foot boom, for the Aetna Portland Cement Co., Detroit.

Outlook Is More Promising

MILWAUKEE, Feb. 7.—A turn for the better in machine tool demand in the last week or two is noted. Apparently metalworking shops have been waiting for the beginning of a new year before re-entering the equipment market, for the rather marked drop in buying just preceding the holidays has only now been relieved. Makers of leather and textile machinery are again buying moderately. Automobile manufacturers are putting out increased inquiry with the beginning of new activity in production. Agricultural implement industries are increasing schedules to meet spring demands and they look for larger scale operations. A few small orders for milling machines are being booked from week to week, but the demand is not yet of such proportions that manufacturers of this class of equipment are able to bring up production.

Machinery Market Is Quiet

CLEVELAND, Feb. 7.—Little of interest has developed in the market for machine tools and shop equipment in this district in the past week. Sales were confined exclusively to single tools and practically all of this trading was in secondhand machinery. Several dealers state the week has been the dullest experienced since the first of

the year. Despite the apparent lack of demand dealers are optimistic and are looking forward to better business in the remaining weeks of the month. New inquiries are being received at a surprising rate and while most of these ask for prices on single tools only, if sales result in the majority of instances the aggregate business done will be sizable.

So far as can be learned there are no large lists being worked on here. The railroads are confining their inquiries to single tools, a number of such coming out during the week. Tool demand from the automotive industry is practically nil. Small machine and repair shops appear to be showing more interest in equipment than the larger organizations.

Inquiries being worked on in this district include one from the Underwriters Laboratories, 207 East Ohio street, Chicago, for a radial drill; one from the Acme Wood Working Co., Chicago, for a lathe; one from the Detroit board of education for drills and grinders; one from H. A. Meier, 2153 Bellevue avenue, Detroit, for an air compressor and a grinder. J. C. Heintz & Co., Cleveland, wants a small engine lathe.

The question of price is paramount in the minds of practically all buyers. New machine tools are being held rigidly to quoted prices, while secondhand equipment prices are extremely soft. Consequently most of the business available is going to dealers in secondhand equipment. Regarding the large machinery purchase made by a local dealer, and mentioned in this column a week ago, it is understood this dealer now is tabulating the tools and is preparing to place them on the market immediately.

There is little demand for crane and allied equipment in this territory. Industrial construction projects are few and until more activity is shown in this line, no large crane demand is looked for. The Sandusky Cement Co. is understood to be in the market for three overhead traveling cranes, each of 10-foot capacity. H. A. Meier, Detroit, is reported in the market for a 35-foot span traveling crane. The Portland, Oreg., commission of public docks is considering bids which were submitted on a locomotive crane. Of seven bidders it is understood the Coast Steel & Machinery Co. was low with a bid of $11,980.

The industrial situation about this district is not greatly improved. Cleveland manufacturers state they have not received any large railroad orders, although rumors are current that small orders for parts for railway cars have been placed. One manufacturer of heavy machinery used by railroads reports there are no orders for this line of equipment in sight. A maker of track equipment reports its business from the railroads is about on a level with that of the past few months. One order which is somewhat cheering, is that placed with the Lakewood Engineering Co., Cleveland. It is understood, a western railroad has placed with this company an order for lift trucks, etc., for use in its warehouses. Officials of the Lakewood company also report that general orders for hauling equipment have been increasing in the past few weeks, its orders for industrial tractors, trailers and elevating trucks during January being about 1/3 the business received last year. Inquiries and orders for road making machinery also are increasing, the company reporting a number of fairly sizable orders for this kind of equipment during the past few days.

Tool Demand Still Is Light

CHICAGO, Feb. 7.—Demand for machine tools at present is light and practically the only inquiry before sellers is that left over from last year, a portion of which has been before the market for many months. Practically nothing new is coming out and while salesmen find prospective buyers regard the market as better from a sentimental point of view, they do not find additional buying as a result. Expected buying from railroads has not materialized and part of this is due to deep cuts in budgets which have included needed equipment. In the case of one road a certain department asked $15,000 for machine equipment and received an appropriation of $1100, not sufficient to buy a single piece of equipment it needed. Auction sales, scalpers and hecondhand equipment interfere with regular selling, and dealers frequently find after figuring for some time with a consumer that he has filled his needs from one of these sources and usually at a much lower price.

Secondhand Equipment Is Favored

PITTSBURGH, Feb. 7.—Activity in the machine tool market this week is centered in used equipment although an occasional single purchase of new machinery is noted. Prospects in the new machine tool field, however, are bright with a number of inquiries pending upon which action has been deferred. Sellers of secondhand machinery are actively accumulating stocks of used equipment against the time of heavy demand which they foresee. It is stated three machines are going into stock for every one which is going out. A nearby user bought a 10-inch drilling and tapping machine, and in addition to some other equipment now is negotiating for six 24-inch lathes. One seller has three purchasers lined up, one for a machine valued at $4000; another for three items worth $1500, $4000 and $4500, respectively, while a third wants approximately $7000 of equipment. The majority of sales made recently are of single machines. One user in Brockwayville, Pa. bought a lathe and shaper from the Reliance Machinery Sales Co., which also sold a lathe, a turret lathe, a milling machine, a hack saw and a press, each going to individual buyers. Pending inquiries include a complete machine shop installation. An out-of-town buyer closed on a 24-inch shaper with Somers, Fitler & Todd during the week. S. W. Hays Sons have sold a continuous dipping and bending metal parts conveyor with holders, 80-foot centers, to the Northwestern Expanded Metal Co., Jeannette, Pa. The American Bridge Co. in addition to the 24-inch shaper with special table noted last week for its Pencoyd works, wants a coping machine. The Western penitentiary has rejected all bids on its recent list and announces it will buy equipment piecemeal as needed. The West Penn Power Co. has appropriated $6,000,000 for power plant equipment at Springdale, Pa., and at Winsor, twelve miles north of Wheeling, W. Va. It is doubted if this will cover any machine tool or crane equipment since about a month ago it purchased a number of secondhand machine tools, including two drill presses and a grinder, and present crane equipment at both places is said to be sufficient for requirements.

Hoist sales include a 1-ton to the Electric Controller & Mfg. Co., Cleveland, and a 5-ton to the Gulf Refining Co., Pittsburgh, for shipment to Port Arthur, Texas. Crane and hoist manufacturers have several active propositions before them. These include three light cranes for handling special material; one crane and two hoists to another nearby user; and three separate jobs, two cranes and one hoist, on which engineering details now are being checked. Several inquiries are current, one involving a large gantry crane, another a 60-ton overhead, where prices are sought on which to base future plans for expansion. One sale consummated by the local office of the Brown Hoisting Machinery Co. involved two 15-ton locomotive cranes for shipment to South America. Early last week 13 crane builders were represented at a conference which took place at Washington with Secretary of Commerce Hoover where-

in present conditions in the crane industry as well as plans for betterment were discussed.

Some Dealers Report Increased Demand

BOSTON, Feb. 7.—Machine tool dealers differ in their views of the present market. Some report activity declining, while one of the largest Boston dealers reports that January was its best month since Ocotber, 1920, and that indications point to even better demand in February. The small buyer has withdrawn from the market in most cases, and the dealers reporting favorable sales are those who have secured a few large contracts from large users of tools. Two paper mills in Maine recently closed on fairly attractive lists. One list includes a milling machine, planer, lathe and drill press, and other tools, all new equipment. The order placed by the other mill amounts to approximately $5000. Used equipment continues to figure prominently in machine tool transactions. Tools from several breweries which have recently been dismantled have come on to the market during the past week, and have been sold at exceptionally low prices. Prices are soft. Some of the smaller dealers are having a difficult time weathering the continued depression and banks are pressing sales at low figures. On the other hand, the much heralded lower prices on new equipment have not materialized. Inquiry which is out at the present time includes several manual training school lists, textile machine manufacturers, paper mills, automobile parts manufacturers, and several large repair shops. The individual lists are small, in most cases being for one or two tools.

Canadian Demand Is Improved

TORONTO, Ont., Feb. 7.—Demand for machinery and machine tools in the Canadian market is spotty. Inquiries dealers received three or four weeks ago are turning into sales and during the week some good business was done. Buying was more active. The chief feature of the market during the week was the orders received from the Durant Motors, Ltd., which is equipping a plant at Leaside, Toronto, Ont. This list was not as big as dealers expected, and the latter are looking for more buying from this quarter. Both dealers and makers of equipment are more optimistic. One leading Canadian manufacturer of equipment stated that while business is much below the standard of 1919, it is better than it was in 1921. The demand for woodworking equipment is active and sales along these lines are increasing. Goldie & McCulloch Co., Galt, Ont., have closed several orders recently, the latest being the contract for installing extensions to the Guelph, Ont., waterworks plant, including three 9-inch pumps, two of which are auxiliary units, each of 3,000,000 gallons capacity, and one booster pump for fire fighting purposes. The demand for small tools is also more active.

The Ontario Creameries, London, Ont., are in the market for ice-making equipment. The city council, Collingwood, Ont., is asking for prices on a motor generator set and storage battery. The town council of Wiarton, Ont., has asked for prices on an electric operated pump and large gasoline engine. Merlin, Ont., plans to spend $28,000 on a power and light distributing plant. Walkerton, Ont., will erect a power distributing station and install equipment to cost $40,000. The Sunshine Soap Co., Hagersville, Ont., Walter Diffie, manager, will build a factory to cost $60,000. The board of commissioners, Edmonton, Alta., will spend $300,000 on improvements and additions to its waterworks plant. Baker & Redden, Thomas street, Windsor, N. S., will erect a sash and door factory there and are receiving prices and information on necessary machinery and equipment.

Construction and Enterprise

Concise and Timely Business Building Opportunities from the Field of Industry

East of the Mississippi River

GADSDEN, ALA.—The Etowah Foundry & Machine Co. has increased its capital from $10,000 to $20,000.

BRIDGEPORT, CONN.—Further electrification of the American Brass Co. plant is reported. Electric furnaces are being installed and electric motors will replace steam engines for furnishing power.

BRIDGEPORT, CONN.—The Efficiency Auto Engineering Co. has been incorporated with $50,000 capital by Thomas Martin, Myron Baker, Jesse B. Woodhull and Alex L. DeLaney.

DANBURY, CONN.—The Berlin Construction Co., Inc., Berlin, Conn., will erect three steel, 1-story, 30 x 300-foot, 40 x 200-foot and 25 x 75-foot buildings for the New England Lime Co., to replace those recently damaged by fire.

HARTFORD, CONN.—Bids have closed for a 1-story, 75 x 155-foot building for the Hartford Electric Light Co., to be used as a battery charging station.

HARTFORD, CONN.—Bids are being received by G. H. Mathews for a $50,000 garage for J. Reibert. The building will be one story, 50 x 220 feet.

NEW HAVEN, CONN.—The Lavelle Mfg. Co. has been incorporated with $50,000 capital stock by Frank W. Gilbert, Arthur B. Alling and Francis A. Degnan.

NEW HAVEN, CONN.—The John Hugo Mfg. Co., maker of electrical specialties, has increased its capital stock from $50,000 to $150,000.

NEW HAVEN, CONN.—The New Haven Appliance Co., Inc., has been incorporated as a manufacturer with $50,000 capital by H. H. Holmes, H. W. MacQuin and R. H. Chirgwin, Hamden, Conn.

NEW HAVEN, CONN.—The World Wonder Lock Co. has been incorporated to make auto locks and accessories with $5000 capital by Allie Willman, Harry Sicol and A. B. O'Keefe.

NEW HAVEN, CONN.—The Johnson Associates, Inc., have been incorporated with $15,000 capital to make metal goods, by Edward M. Day and Philip Roberts, both of Hartford, Conn., and L. A. Howard, Farmington, Conn.

NORWALK, CONN.—The Veco Mfg. Co. has been incorporated to make wire goods with $50,000 capital by George G. Ernst, Joseph A. Volk, Jr., and J. W. Ernst.

STAMFORD, CONN.—The Victor Page Motors Corp., New York, has purchased 4 acres and will erect a factory.

STRATFORD, CONN.—A 3-story, 55 x 104-foot factory will be erected here by Hollander Bros., manufacturers of metal products.

WALLINGFORD, CONN.—A $100,000 plant will be erected here by H. L. Judd & Co. The building will be five stories, 80 x 100 feet.

WATERBURY, CONN.—The Waterbury Mfg. Co., 236 Grand street, maker of brass goods, recently purchased a factory building,

50 x 102 feet, which it will utilize as a plant addition.

BOYNTON, FLA.—The Tabit Pump Attachment Co. has been incorporated with $20,000 capital by W. S. Shepard, P. D. Lynch and others.

ATLANTA, GA.—Frank Weldon, care of the chamber of commerce, plans to establish a plant for the manufacture of wire door mats.

FT. VALLEY, GA.—The Interlocking Toggle Rim Co. has been incorporated with $300,000 capital stock, to manufacture wheels, rims, etc., by J. A. Bedingfield, E. L. Avera and R. H. Hartley.

CHICAGO—The Ziv Steel & Wire Co. has increased its capital stock from $2500 to $20,000.

CHICAGO—Frank D. Chase, Inc., is building a foundry at Cadillac, Mich., for R. J. Teetor and associates.

CHICAGO—The Caspers Tin Plate Co., 2259 Oakdale avenue, has been incorporated by W. J. and A. E. Thiffault and R. I. Caspers.

CHICAGO—The I. W. A. Bunge Mfg. Co., 2638 West Madison street, has been incorporated to engage in a general machine shop business with $20,000 capital stock by H. C. Dawson, Helen D. Bunge and I. W. A. Bunge.

CHICAGO—The Pringle & Brodie Machinery Co., 366 West Polk street, has been incorporated with $25,000 capital stock by Paul Kopplin, Raymond Kopplin and Walter Kopplin, to manufacture and deal in machinery, etc.

CHICAGO—Frank Harris Sons Co., Inc., 332 South Michigan avenue, has been incorporated with $250,000 capital stock to manufacture and deal in tools, etc., by Isaac S. Rothschild, Harvey L. Harris and Francis L. Harris.

CHICAGO—The Arctic Mfg. Corp., 1315 South Oakley avenue, has been incorporated with $10,000 capital stock to manufacture and deal in auto accessories, etc., by Albert Hassak, Joseph Manning and Frank Abuja.

CHICAGO—The Universal Metal Products Mfg. Co., 704 North Sangamon street, has been incorporated with $25,000 capital stock by J. B. Lawrence, J. L. Finkelstein and J. F. Lawrence.

CHICAGO—The Machinery Market, Inc., 617 Fulton street, has been incorporated with 48 shares of no par value, by William D. Alton, Walter A. Miller, O. B. Cahoon and S. J. Stevenson.

CHICAGO—The P. C. West Mfg. Co., 105 West Monroe street, has been incorporated with $50,000 capital to manufacture and deal in machinery., by E. H. Lochner, Urban A. Lavery and A. T. Carton.

CHICAGO—The Wagner Bros. Cornice Co., 1010 Diversey Parkway, has been incorporated with $10,000 capital to manufacture and deal in sheet metal roofing, etc., by Russel B. Burt, S. A. Murray and John J. Rooney.

CHICAGO—The Acme Wire & Iron Works, Inc., 118 North La Salle street, has been incorporated with $5000 capital stock by Estelle Land, Arthur A. G. Lund and William F. Blanchfield.

CHICAGO—The Peerless Range Boiler Corp., 108 South La Salle street, has been incorporated with $10,000 capital, by B. Tumpowsky, L. F. Mason and Herbert E. Skinner.

CHICAGO—The S. & S. Tin Specialty Co., 15, 163, North Wabash avenue, has been incorporated with $3000 capital stock by Irving Stein, Isaac Slafsky and Max Garber, to manufacture and deal in tin and sheet metal specialties.

CHICAGO—The National Auto Device Co., 230 East Ohio street, has been incorporated with $50,000 capital to manufacture and deal in automobile accessories, etc., by Guy R. Parmele, Milton T. Miller and Melvin L. Gibbard.

CHICAGO—The Ketchum Heating Co., 3150 West Chicago avenue, has been incorporated to manufacture and deal in heating and plumbing appliances, etc., with $15,000 capital stock by Louis Slinger, James T. Ketchum and Marcus Weil.

New Fields for American Machinery Opened

DESPITE the fact Europe, in the past the largest buyer of heavy industrial machinery from America, is demoralized, opportunities for export business are offered in Asia and South America, according to the industrial machinery division of the bureau of foreign and domestic commerce. In 1921 *Asia absorbed nearly 25 per cent of the American exports, against* 6.8 *per cent in* 1918 *and 7.4 in* 1910. *The increase in exports of industrial machinery to Japan has been sensational, growing from* $1,000,000 *in* 1915 *to* $29,000,000 *in* 1920. *China, Dutch East Indies, Brazil, Cuba and the Argentine also have greatly enlarged their buying in the United States. The Chinese business, in particular, may be expected to increase. Next to Japan the division ranks Mexico as an important purchaser of industrial equipment.*

CHICAGO—The Automotive Devices Corp., 69 West Washington street, has been incorporated with $20,000 capital stock to manufacture and deal in auto accessories, etc., by Victor E. Enyart, Samuel Cohen and David Cohen.

CHICAGO—The Bauer Mfg. Co., 117-119 East Thirtieth street, has been incorporated with $150,000 capital stock to manufacture and deal in safety locks, automobile devices, etc., by B. S. Bauer, Harry B. Louer, P. E. Hetz, T. J. Carling, Fred P. Kelley, William Ganz and Leonard Sutterman.

CHICAGO HEIGHTS, ILL.—The Mid-Continental Corp., First State Bank building, has been incorporated to manufacture and deal in steel commodities, by H. C. Jones, Albert E. Long, Samuel S. Holmes and others.

EVANSTON, ILL.—The Elger Heating Corp., 926 Ridge avenue, has been incorporated to manufacture and deal in machinery, etc., by Joseph Elger, R. Elger, Herman G. Goda and others.

FAIRBURY, ILL.—The F. R. M. Mfg. Co. has been incorporated with $4000 capital stock to manufacture auto parts, etc., Arthur Ferguson, B. H. Mathesos, J. B. Ripley, H. L. Ripley, G. Y. McDowell, J F. McDowell and C W. Veatch.

HIGHLAND, ILL.—The Hug Co. has been incorporated with $100,000 capital stock by Adolph Meyer, Amos P. Spencer and Christian J. Hug to manufacture and deal in road building equipment, machinery, etc.

JACKSONVILLE, ILL.—The Bubble Chain Co., Farrell State Bank building, has been incorporated with $25,000 capital by T. A. Chapin, H. F. Samuel and J. W. Bubble.

ROCKFORD, ILL.—The Damascus Steel Products Corp., 1500 Fourteenth avenue, has been incorporated with $50,000 capital stock by C. F. Maitland, C. P. Twomey, J. R. Hughes and Jacob Aaron.

EAST CHICAGO, IND.—The East Chicago Mfg. Co. has been incorporated with $25,000 capital stock by Harry E. Biedinger, Charles C. Sheldon, Grace I Biedinger and Lulu A. Sheldon.

HAMMOND, IND.—John A. Milo, clerk of the water department, will receive bids until Feb. 15 for a traveling crane.

MARION, IND.—The Atlas Foundry Co. has been incorporated with $10,000 capital stock by C. E. Swank, C. P. Osborn and O. V. Coon.

BARBOURVILLE, KY.—The Cumberland & Manchester railroad plans car and locomotive shop enlargements.

KITTERY, ME.—The Three Metals Co. has been incorporated with $1,000,000 capital by Harry W. Foster, Elmer J. Burnham and George E. Burnham.

PORTLAND—ME.—The Cumberland County Power & Light Co. has let contracts for a power plant.

PORTLAND, ME.—The Iron Exploration Co. has been incorporated with $25,000 capital by R. L. Johnson, A. B. Farnham and M. F. Foster.

BALTIMORE—The Lock Joint Pipe Co. has leased a site for a plant for the manufacture of pipe. A. M. Hirsh is president.

JESSUPS, MD.—A 2-story, 45 x 150-foot machine shop will be erected at the Maryland house of correction, Bridewell, Md.

BARNSTABLE, MASS.—Leonard & Ames, Inc., has been incorporated with $25,000 capital to operate a machine shop by J. Milton Leonard, Samuel N. Ames, Burleigh D. Leonard and Barnard S. Ames.

BOSTON—The Blagdon Mfg. Co. has been incorporated with $50,000 capital to make metal goods by Artemus W. Spofford, Reginald Morrison and Francis V. McCarthy, all of Lynn, Mass.

BOSTON—The Convertible Auto Body Co. has been incorporated with $40,000 capital to build automobile bodies by E. Farnum Rockwood, Newton Highlands, Mass., Henry L. Johnson, David J. Stevens and others.

BOSTON—The Domestic Oil Heating Co. has been incorporated with $25,000 capital to make heating appliances by J. Frederick Mann, Paul Barron Watson Jr., and George B. Rowell, Cambridge, Mass.

BOSTON—The R. C. V. Dryer Co., Inc., has been incorporated with $200,000 capital to make drying apparatus by Otis D. Rice, Charles O. Rogers, Winthrop, Mass., Harland F. Brown, Framingham, Mass., and others.

BOSTON—The Convertible Auto Body Co. has been incorporated to build automobile bodies with $40,000 capital by E. Farnum Rockwood, Newton Highlands, Mass., Henry L. Johnson, David J. Stevens and others.

BOSTON—The George E. Gilchrist Co. has been incorporated to make electrical and pneumatic apparatus with $75,000 capital by Miles Wambaugh, Cambridge, Mass., Charles S. Ister and Laurence M. Lombard, Winchester, Mass.

BOSTON—The Engineering Development Co. has been incorporated to build machinery with $90,000 capital by Albert M. Lyon, Newton, Mass., W. Sidney Felton, Salem, Mass., and Lester P. Leathers, Somerville, Mass.

BOSTON—Henry Cole & Co., Inc., has been incorporated to build machinery with $50,000 capital by William M. Schofield, Newtonville, Mass., Frank G. Floete, Cambridge, Mass., and George Callaghan.

CAMBRIDGE, MASS.—Walter W. Field, 39 Hayward street, plans to rebuild his machine shop recently damaged by fire.

CAMBRIDGE, MASS.—The Cambridge Electric Light Co. plans erection of a 1-story, 80 x 180 foot substation.

HOLYOKE, MASS.—Bids will close March

14 for two girder bridges to cost $30,000 over the canal on Lyman street, for the city.

HOLYOKE, MASS.—William Skinner & Sons have let the contract for a 5-story, 70 x 200-foot mill to cost $100,000. The American Bridge Co., New York, has the contract to erect the steel.

SHELBURNE FALLS, MASS.—The plant of the Lamson & Goodnow Mfg. Co., maker of cutlery, recently was damaged by fire. The loss was estimated at $25,000.

SOMERVILLE, MASS.—Underhill Brothers, makers of edge tools, have let the contract for a 1-story, 50 v 100-foot factory.

WESTFIELD, MASS.—The H. B. Smith Co. plans to erect a 1-story, 30 x 140-foot addition to its foundry. It will be used as a machine shop.

WHITINSVILLE, MASS.—The Worcester Suburban Electric Co. is to erect a substation here and a similar one in East Douglas, Mass.

WORCESTER, MASS.—The New England Power Co. is to expend $6,000,000 before 1924 in improving its system.

WORCESTER, MASS.—The Rice, Barton & Fales Machine & Iron Co., builder of paper machinery, has increased its capital stock from $150,000 to $675,000.

WORCESTER, MASS.—The Worcester Fiber Products Co has been incorporated with $10,000 capital to make iron, steel and copper goods by J. Henry Lindberg, William J. Skarin, George A. Lindberg and David J. Lindquist.

WORCESTER, MASS.—The United States Peat Products Co. has been incorporated with $99,000 capital. The officers of the company are: President, Charles W. Higginbotham; treasurer, Edmund R. Cummins; clerk, Harry J. Fish.

ADRIAN, MICH.—Another manufacturing plant has been secured for this city through the sale of a portion of the plant of the Adrian Steel Castings Co. to the Anchor Concrete Machinery Co. of Rock Rapids, Iowa. The company plans to erect an additional building it is understood.

DETROIT—The Lincoln Mfg. Co., 2630 Erskine street, maker of electric lighting fixtures, etc., plans a 3-story plant addition, 30 x 115 feet, to cost about $100,000.

MILAN, MICH.—The American Furnace & Foundry Co. plans a plant addition.

CAMDEN, N. J.—A 2-story, 40 x 40-foot foundry will be erected here by the S. V. Reeves Stove Co.

EGG HARBOR, N. J.—The Ingram Motor Co., 2 Rector street, New York, plans a 2-story, 40 x 200-foot automobile plant here. A power plant will be built in connection.

JERSEY CITY, N. J.—A factory building will be erected here by L. O. Koven & Bro. for the manufacture of galvanized range boilers and other metal products.

JERSEY CITY, N. J.—The Singer-Frisch Mfg. Co. has been incorporated to manufacture and deal in sound producing devices, with $100,000 capital stock by Barney Singer, Arthur Frisch and Eugene J. Ungar.

NEWARK, N. J.—The Cartoning Machinery Corp. has been incorporated with $150,000 capital by George B. Bailey, Joseph Carracino and Ralph W. Chandless.

NEWARK, N. J.—Property has been purchased here by the Ordis Products Trading Co., Brooklyn, as a site for a plant for the distillation of oils and chemicals.

BINGHAMTON, N. Y.—The Binghamton Heat, Light & Power Co. plans an electric light and power plant.

BROOKLYN, N. Y.—The K. & O. Co., Inc., 366 Butler street, maker of metal products, plans plant improvements.

BROOKLYN, N. Y.—Charles Cohen, 308-10 Oakland street, operating a plant for the manufacture of auto bodies, plans a 1-story addition, 25 x 100 feet.

BROOKLYN, N. Y.—Thomas J. McManus & Sons, 33-35 Moutrie street, plans a 2-story plant addition, 25 x 100 feet, to cost about $14,000.

BROOKLYN, N. Y.—A. T. Dougan has been incorporated with $10,000 capital to make metal products by A. T. Dougan, J. W. Yohe and W. R. Lyman. The company is represented by H. Lubetkin, 340 Fifth avenue.

BROOKLYN, N. Y.—The Glenmore Iron Works has been incorporated with $10,000 capital by N. Rosenfeld, Z. and R. Schecter. The company is represented by J. W. Boccio, 132 Nassau street.

BUFFALO—The Wiggler Corp. recently was incorporated with $50,000 capital to manufacture signal devices, etc.

NEW YORK—The Buffalo Brake Beam Co. has increased its capital stock from $20,000 to $100,000.

NEW YORK—A $90,000 garage will be erected by I. Langner at 185 Broadway. The structure will be two stories, 35 x 50 feet.

NEW YORK—A garage, two stories, 100 x 100 feet, will be erected by the W. M. Realty Corp., 116 West Thirty-ninth street, at an estimated cost of $65,000.

NEW YORK—Mouritz F. Westergren, Inc., 213 East 144th street, maker of sheet metal products, has awarded a contract for a 2-story plant addition, 28 x 96 feet, to cost $20,000.

NEW YORK—The Air-O-Phone Corp. has been incorporated to make machinery, etc., with $50,000 capital stock by M. Rosenthal, B. Bernstein and S. M. Schwartz. The company is represented by J. Levy, 280 Broadway.

NEW YORK—The Freed Eisemann Radio Corp. has been incorporated with $25,000 capital to make wireless apparatus, etc., by A. W. Jack and C. Nulle. The company is represented by F. G. Weisser, 2 Rector street.

NEW YORK—R. Steel & Sons, iron and steel, have been incorporated with $50,000 capital by R. and T. and R. A. Steel. The company is represented by J. K. Ellenbogen, 220 Broadway.

NEW YORK—The Union Port Brass Foundry Co. has been incorporated with $30,000 capital stock by H. V. Beborfald, B. F. Vineburg and P. E. Uhr. The company is represented by Manken Bros., 206 Broadway.

NEW YORK—The Harmsan Equipment Co. has been incorporated with $10,000 capital by M. Salpter, D. I. Goldstein and M. Schwartzman. The company is represented by Cohen & Goldfarb, 302 Broadway.

NEW YORK—The Black-Matthews Co., iron and steel, has been incorporated with $10,000 capital stock by J. N. Black, E. J. Matthews and M. Gallagher. The company is represented by Hadlock & Malone, 233 Broadway.

Industrial Business Changes Recently Announced

THE Whiting Corp., Harvey, Ill., manufacturer of cranes, foundry equipment and railway specialties, on March 1 will establish its own New York offices at 136 Liberty street. The company has been represented in the East by the Wonham, Bates & Goode Trading Corp., 251 Fourth avenue, New York. J. Ross Bates and D. P. Plederman, both of the Wonham company, will be associated with the Whiting offices, Mr. Bates being in charge.

* * *

Holdings of the Blairsville Iron Works, Blairsville, Pa., have been bought by the Conemaugh Iron Works Co., Latrobe, Pa., according to advices.

* * *

The Rathbun Jones Engineering Co., Toledo, O., has made the Ingersoll-Rand Co., 11 Broadway, New York, its general sales agent for the distribution of its gas engines.

* * *

To handle steel on a general wholesale brokerage basis, the Reliable Iron & Metal Co., Peoria, Ill., has opened a new department with H. G. Schaeffer as manager.

* * *

Organization of the Maryland Smelting & Refining Co., Inc., has been effected for the purpose of taking over the Hagerstown Bearing Metal Co., Hagerstown, Md.

* * *

The Yale & Towne Mfg. Co., Stamford, Conn., plans to start a branch manufacturing establishment in the neighborhood of Pottsdam, Germany, about March 1.

* * *

Increased production has caused the India Machine & Rubber Mold Co., Akron, to move into the plant of the Vulcan Welder Co., at Akron, from the old Seiberling Mower & Reaper Co.'s building. The new quarters has 5000 square feet of floor space.

* * *

Representing the Atlas Car & Mfg. Co., Cleveland, W. E. Hopton, of the Hopton Co., White Memorial building, Syracuse, N. Y., has been appointed selling agent for New York state except the territory south of Albany and New York City.

* * *

Appointment has been made of the Homestead Sales Corp., 242 Lafayette street, New York, as sole agent for New York and its vicinity, by the General Specialty Co., Buffalo, N. Y., for the sale of torpedo tube and other boiler cleaning specialties.

Iron and Steel Production

Compiled By THE IRON TRADE REVIEW

Pig Iron

	-Stacks- No.	In	—Output— Total	Av. daily
1907				
January	376	311	2,174,801	69,509
February	374	308	2,047,036	73,109
March	377	304	2,186,709	70,539
April	378	327	2,226,708	74,223
May	391	329	2,291,030	73,904
June	392	341	2,237,420	74,580
July	396	335	2,253,243	72,685
August	397	329	2,243,656	72,376
September	399	329	2,174,148	72,471
October	401	314	2,359,690	76,119
November	398	226	1,820,558	60,685
December	398	154	1,234,733	39,830
Total			25,299,732	
1908				
January	398	139	1,081,813	34,316
February	401	150	1,086,809	37,476
March	398	154	1,229,856	39,672
April	398	146	1,155,122	38,504
May	396	145	1,168,002	37,677
June	395	154	1,106,300	36,876
July	397	166	1,228,604	39,632
August	399	181	1,366,019	44,065
September	399	189	1,416,252	47,208
October	400	200	1,573,824	50,764
November	402	212	1,582,314	52,744
December	403	221	1,723,664	55,602
Total			15,680,140	
1909				
January	406	234	1,787,473	57,683
February	407	233	1,682,470	60,088
March	406	229	1,822,024	58,793
April	406	224	1,731,406	57,687
May	407	236	1,866,757	60,218
June	408	240	1,929,929	64,334
July	409	258	2,088,620	67,375
August	412	278	2,232,642	72,021
September	413	297	2,378,655	79,186
October	413	309	2,589,681	84,001
November	414	311	2,532,740	84,425
December	416	314	2,682,702	86,539
Total			25,337,002	
1910				
January	416	311	2,599,995	83,871
February	417	311	2,429,525	86,747
March	417	310	2,588,736	83,580
April	418	291	2,477,700	82,590
May	421	206	1,871,388	60,367
June	420	271	2,288,279	76,276
July	420	254	2,158,124	69,617
August	422	244	2,103,793	67,864
September	420	234	2,048,461	68,282
October	421	230	2,086,205	67,297
November	421	218	1,910,385	63,679
December	421	193	1,779,899	57,192
Total			26,840,314	
1911				
January	421	210	1,766,658	56,985
February	421	226	1,781,285	63,617
March	421	236	2,165,764	69,867
April	421	220	2,044,904	68,163
May	421	206	1,871,388	60,367
June	421	202	1,773,282	59,109
July	423	196	1,776,108	57,294
August	423	206	1,921,832	61,995
September	423	216	1,973,918	65,797
October	421	214	2,092,061	67,486
November	421	214	1,999,100	66,637
December	422	215	2,032,301	65,558
Total			23,198,601	
1912				
January	421	227	2,052,806	66,220
February	422	235	2,098,796	72,372
March	420	237	2,411,529	77,791
April	421	239	2,377,621	79,254
May	423	243	2,503,341	80,753
June	424	242	2,433,737	81,125
July	422	245	2,402,567	77,502
August	423	255	2,500,163	80,650
September	419	262	2,444,454	81,482
October	422	280	2,683,645	86,569
November	423	289	2,639,562	87,985
December	423	291	2,777,292	89,590
Total			29,325,513	
1913				
January	423	297	2,287,800	89,929
February	423	306	2,778,670	92,095
March	423	278	2,562,823	89,123
April	421	297	2,754,353	91,812
May	421	285	2,716,825	90,865
June	422	283	2,816,883	87,229
July	422	264	2,658,275	82,525
August	424	260	2,537,318	81,839
September	425	258	2,594,098	83,137
October	425	244	2,439,924	81,933
November	424	225	2,529,960	74,322
December	424	191	1,976,138	63,746
Total			30,652,767	
1914				
January	423	199	1,879,336	60,624
February	423	219	1,888,607	67,450
March	423	232	2,341,551	75,534
April	422	212	2,261,501	75,383
May	422	198	2,097,019	67,646
June	422	193	1,904,566	63,486
July	422	187	1,955,324	63,075
August	422	187	1,996,483	64,403
September	422	180	1,882,718	62,757
October	422	162	1,767,227	57,007
November	421	150	1,501,269	50,042
December	421	154	1,495,325	48,236
Total			22,970,926	
1915				
January	421	165	1,591,024	51,323
February	421	179	1,666,592	59,521
March	421	190	2,046,280	66,009
April	421	197	2,114,518	70,484
May	421	207	2,255,157	72,747
June	421	221	2,369,932	78,998
July	421	234	2,563,311	82,687
August	421	246	2,774,825	89,510
September	420	266	2,834,342	94,478
October	420	276	3,120,340	100,656
November	421	285	3,035,235	101,174
December	421	295	3,201,605	103,278
Total			29,573,161	
1916				
January	421	304	3,171,878	102,319
February	421	312	3,078,548	106,157
March	422	315	3,327,630	107,343
April	422	320	3,225,496	107,517
May	423	321	3,364,584	108,535
June	423	325	3,213,818	107,127
July	419	316	3,221,127	103,907
August	419	317	3,197,838	103,156
September	419	326	3,208,041	106,935
October	419	328	3,508,180	113,167
November	420	322	3,317,805	110,593
December	422	309	3,184,178	102,715
Total			39,019,123	
1917				
January	422	310	3,159,839	101,930
February	422	317	2,649,935	94,641
March	423	331	3,255,813	105,026
April	425	333	3,328,061	110,936
May	425	340	3,413,677	110,119
June	427	347	3,260,234	108,675
July	429	351	3,337,442	107,659
August	431	355	3,238,970	104,483
September	431	344	3,140,742	104,691
October	433	354	3,296,286	106,332
November	434	344	3,198,597	106,620
December	435	321	2,885,380	93,077
Total			38,164,976	
1918				
January	433	294	2,403,227	77,523
February	438	319	2,318,242	82,794
March	438	338	3,209,996	103,548
April	437	351	3,273,355	109,112
May	437	360	3,451,884	111,351
June	437	353	3,316,148	110,538
July	437	364	3,408,584	109,954
August	439	371	3,378,479	108,983
September	438	364	3,413,223	113,774
October	437	364	3,482,392	112,335
November	437	360	3,347,844	111,595
December	435	351	3,434,114	110,602
Total			38,437,488	
1919				
January	435	330	3,306,279	106,654
February	435	311	2,943,347	105,270
March	435	279	3,088,023	99,614
April	435	216	2,474,374	82,479
May	433	197	2,107,729	67,991
June	433	199	2,114,028	70,467
July	434	240	2,424,212	78,200
August	432	266	2,742,081	88,453
September	433	163	2,480,790	82,692
October	432	216	1,864,424	60,142
November	432	252	2,407,369	80,244
December	432	262	2,626,074	84,711
Total			30,578,780	
1920				
January	432	285	3,012,373	97,172
February	432	305	2,984,257	102,904
March	433	315	3,375,768	108,895
April	433	278	2,752,670	91,754
May	433	297	2,991,825	96,510
June	433	302	3,046,623	101,553
July	434	291	3,043,918	98,190
August	434	306	3,145,536	101,168
September	434	317	3,124,308	104,173
October	435	290	3,288,341	106,075
November	435	255	2,935,081	97,836
December	435	202	2,700,268	87,105
Total			36,400,968	
1921				
January	436	184	2,414,753	77,895
February	436	155	1,927,088	68,906
March	436	103	1,593,542	51,447
April	436	96	1,190,751	39,691
May	436	90	1,215,272	39,202
June	436	74	1,064,007	35,466
July	435	69	864,642	27,892
August	435	69	954,901	30,802
September	435	84	985,795	32,857
October	435	95	1,234,450	39,821
November	429	120	1,414,958	47,165
December	429	123	1,642,775	52,992
Total			16,506,564	
1922				
January	430	127	1,645,809	53,090

Lake Ore Shipments

Gross Tons, Rail and Water

1921	22,799,077
1920	60,411,572
1919	48,546,651
1918	62,836,172
1917	64,437,003
1916	66,658,466
1915	47,272,751
1914	32,729,726
1913	49,947,116
1912	48,221,546

Ingots and Castings

By American Iron and Steel Institute

	Ingots	Castings	Total
1910	25,154,087	940,832	26,094,919
1911	23,029,479	646,627	23,676,196
1912	30,284,682	966,621	31,251,303
1913	30,280,130	1,020,744	31,300,874
1914	22,819,784	693,246	23,513,030
1915	31,284,212	866,824	32,151,036
1916	41,401,917	1,371,763	42,773,680
1917	43,619,200	1,441,407	45,060,607
1918	43,051,022	1,411,410	44,462,432
1919	33,694,795	976,437	34,671,232
1920	40,881,392	1,251,542	42,132,934

Monthly Ingot Output

Gross Tons

	84.2 per cent of capacity	Indicated total
January	2,203,186	2,620,000
February	1,749,477	2,080,000
March	1,570,978	1,860,000
April	1,213,958	1,440,000
May	1,265,850	1,500,000
June	1,003,406	1,190,000
July	803,376	955,000
August	1,138,071	1,350,000
September	1,174,740	1,400,000
October	1,616,810	1,900,000
November	1,660,001	1,970,000
December	1,427,093	1,680,000
Total	16,826,946	19,945,000

The Menominee Herald-Leader is a live, wide-awake and progressive daily in a busy community in Michigan. Comparatively small though it is, it appreciates the value of news and believes in giving its readers plenty of it.

STEEL MILLS ARE MOVING AGAIN

Iron Trade Review Says Mills Are Responding to Tonnage Increase Shown.

CLEVELAND, O.—The Iron Trade Review today says: Operations at iron and steel plants are beginning to respond more noticeably to continued tonnage increase from consumers. In Chicago district the largest producers this week is running at 38 per cent of capacity and the leading independent at 35 per cent. Steel making operations in the Mahoning valley are 55 per cent and sheet mill output there this week is at 78 per cent, the best record of the present year. American Sheet & Tin Plate company also is operating all its sheet mills at 78 per cent of its tin plate plant at 63 per cent. Eastern plate mills report this work the best bookings of the year. Several additional blast furnaces are being restored to production.

400 Newspapers Regularly Quote

THE IRON TRADE REVIEW

CLEVELAND

The international reputation and the World-wide circulation of THE IRON TRADE REVIEW is the result of year after year of unfailing Editorial accuracy and reliability.

PROOF—

THE IRON TRADE REVIEW

"The Most Widely Quoted Trade Paper In The World"

Iron and Steel Prices

Iron Ore

LAKE SUPERIOR ORES
Per Gross Ton Lower Lake Ports

Old range Bessemer, 55 per cent iron..$6.45
Mesabi Bessemer, 55 per cent iron.... 6.20
Old Range nonbessemer, 51½ per cent iron 5.70
Mesabi nonbessemer, 51½ per cent iron 5.55

PORT HENRY IRON ORE
Per Gross Ton, F.o.b., Pprt Henry

Old bed 21 furnace.....$4.85
Old bed concentrates, 63 per cent..... 5.75
Harmony, cobbed, 63 per cent..... 5.75
New bed, low phos., 65 per cent..... 8.50
Lump ore for fix..... 6.00

Manganese Ore

Brazilian, 48 to 50 per cent c.i.f. Atlantic ports, 22 cents per unit.

Indian 48 to 50 per cent c.i.f. Atlantic ports, 22 cents per unit.

Fluor Spar

Washed gravel Kentucky and Illinois mines, per ton.....$17.00 to 20.00

Rivets

Structural rivets ..... 2.00c to 2.25c
Boiler rivets, Pittsburgh..... 2.10c to 2.35c
Rivets ⅞-in. and smaller, Pittsburgh .....70-10 and 5 to 70-10-10 off

Nuts and Bolts

NUTS
(Up to 1¼ and 1½ inches inclusive)

Hot pressed, square blank.....$5.50 off
Hot pressed, square tapped..... 5.00 off
Hot pressed, hexagon blank..... 5.50 off
Hot pressed, hexagon tapped..... 5.00 off
Cold pressed, square tapped..... 5.00 off
Cold pressed, square blank..... 5.25 off
Cold pressed, hexagon tapped..... 5.00 off
Cold pressed, hexagon blank..... 5.25 off
Cold pressed semifinished hexagon nuts ½-in. and larger.....70-10-10 off
Cold pressed semifinished hexagon nuts ⅞-inch and smaller....70-10-10 off
Case hardened, finished, hexagon...75-7½ off
Price f.o.f. Pittsburgh, Packages of 50.

CARRIAGE BOLTS
⅜ x 6 inches, smaller and shorter

Rolled thread .....65-10-10 off
Cut thread .....65-10 to 70 off
Larger and longer.....65-10 to 70 off

MACHINE BOLTS
(⅜ x 4 inches, hot pressed nuts)

Rolled thread .....70-10-5 to 70-10-7½ off
Cut thread .....70-5 to 70-10 off
Larger and longer.....65-10-5 to 70-10 off

(⅜ x 4 inches, cold punched nuts)

Cut thread .....65-5 off
Larger and longer.....65 off
Lag screws .....70-10 to 70-10-5 off
Plow bolts Nos. 1, 2 and 3 heads..60-10 off

Warehouse Prices

STEEL BARS

Boston	2.555c
Buffalo	2.55c
Chicago	2.53c
Cincinnati	2.65c to 2.90c
Cleveland	2.36c
Detroit	2.58c
New York	2.53c
Philadelphia	2.50c
San Francisco	3.25c
Seattle	3.50c
St. Louis	2.625c
St. Paul	3.06c
Los Angeles	3.10c

IRON BARS

Boston	2.555c
Buffalo	2.55c
Chicago	2.53c
Cincinnati	2.65c to 2.90c
Detroit	2.73c
New York	2.53c
Philadelphia	2.50c
St. Louis	2.625c

SHAPES

Boston	2.655c
Buffalo	2.65c
Chicago	2.63c
Cincinnati	2.75c to 3.00c
Cleveland	2.46c
Detroit	2.68c
New York	2.63c
Philadelphia	2.50c
San Francisco	3.25c
Seattle	3.50c
St. Louis	2.725c
St. Paul	3.06c
Los Angeles	3.20c

PLATES

Boston	2.655c
Buffalo	2.65c
Chicago	2.63c
Cincinnati	2.75c to 3.00c
Cleveland	2.46c
Detroit	2.68c
New York	2.63c
Philadelphia	2.50c
San Francisco	3.25c
Seattle	3.50c
St. Louis	2.725c
St. Paul	3.06c
Los Angeles	3.50c

NO. 10 BLUE ANNEALED SHEETS

Boston	3.48c
Buffalo	3.40c
Chicago	3.38c
Cincinnati	3.35c to 3.60c
Cleveland	3.10c
Detroit	3.38c
New York	3.28c
Philadelphia	3.25c
San Francisco	4.10c
Seattle	4.50c
St. Louis	3.475c
St. Paul	3.66c
Los Angeles	4.50c

NO. 28 BLACK SHEETS

Boston	4.50c
Buffalo	4.25c
Chicago	4.15c
Cincinnati	4.50c to 4.75c
Cleveland	4.00c
Detroit	4.15c
New York	3.75c
Philadelphia	3.75c
San Francisco	5.60c
Seattle	5.70c
St. Louis	4.15c
St. Paul	4.43c
Los Angeles	6.00c

NO. 28 GALVANIZED SHEETS

Boston	5.50c
Buffalo	5.25c
Chicago	5.15c
Cincinnati	4.50c to 4.75c
Cleveland	4.75c
Detroit	5.15c
New York	4.75c
Philadelphia	4.75c
San Francisco	6.45c
Seattle	6.70c
St. Louis	5.15c
Los Angeles	6.75c

BANDS

Boston	3.155c
Buffalo	3.15c
Chicago	3.13c
Cincinnati	3.25c to 3.50c
Cleveland	2.96c
Detroit	3.18c
New York	2.13c
Philadelphia	3.10c
San Francisco	3.90c
Seattle	4.00c
Los Angeles	4.00c

HOOPS

Boston	3.315c
Buffalo	3.15c
Cleveland	2.96c
Detroit	3.18c
New York	3.38c
Philadelphia	3.25c
Seattle	4.50c

COLD ROLLED SHAFTING

Boston (round)	3.55c
Buffalo	3.40c
Chicago	3.40c to 3.90c
Cincinnati (round)	3.60c to 3.70c
Detroit	3.50c
New York	3.45c
New York (flats, squares and hexagons)	3.95c
Philadelphia	3.25c
San Francisco	4.65c
Seattle	5.00c
Los Angeles	5.10c
Boston, flats, squares and hexagons	4.05c

Steel Pipe

Pittsburgh basing discounts, jobbers' carloads

STANDARD WEIGHT
Butt Weld

	Black	Galvanized
⅛-inch	54½	28
¼ and ⅜-inch	60	33½
½-inch	65	50½
¾-inch	69	56½
1 to 3-inch	71	58½
Lap Weld		
2-inch	64	51½
2½ to 6-inch	68	55½
7 to 8-inch	65	51½
9 to 12-inch	64	50½

REAMED AND DRIFTED
Butt Weld

1 to 3-inch	69	56½
Lap Weld		
2-inch	62	49½
2½ to 6-inch	66	53½

EXTRA STRONG—PLAIN ENDS
Butt Weld

⅛-inch	50½	33
¼ and ⅜-inch	56	38½
½-inch	62	50½
¾-inch	67	55½
1 to 1½-inch	69	57½
2 to 3-inch	70	58½
Lap Weld		
2-inch	62	50½
2½ to 4-inch	66	54½
4½ to 6-inch	65	53½
7 to 8-inch	61	47½
9 to 12-inch	55	41½

DOUBLE EXTRA STRONG—PLAIN ENDS
Butt Weld

½-inch	51	40½
¾ to 1½-inch	54	43½
2 to 2½-inch	56	45½
Lap Weld		
2-inch	50	40½
2½ to 4-inch	52	42½
4½ to 6-inch	51	41½
7 to 8-inch	47	33½

Wrought Iron Pipe

Pittsburgh basing discounts, jobbers, carloads

THREADS AND COUPLINGS
Butt Weld

	Black	Galvanized
⅛ and ¼-inch	3½	+22½
⅜-inch	36½	18½
½-inch	42½	27½
¾-inch	42½	27½
1 to 1¼-inch	44½	29½
Lap Weld		
2-inch	39½	25½
2½ to 6-inch	42½	29½
7 to 12-inch	40½	27½

PLUGGED AND REAMED
Two points less than above
EXTRA STRONG, PLAIN ENDS
Butt Weld

⅛ and ¼-inch	+ 4½	+37½
⅜-inch	35½	23½
½-inch	42½	28½
¾-inch	44½	30½
1 to 1½-inch		
Lap Weld		
2-inch	40½	27½
2¼ to 4-inch	43½	31½
4½ to 6-inch	42½	30½
7 to 8-inch	35½	23½
9 to 12-inch	30½	18½

DOUBLE EXTRA STRONG, PLAIN ENDS
Butt Weld

½-inch	+27	+39
¾-inch	+ 7½	+19½
1-inch	+23½	+35½
1¼-inch	+ 7½	+19½
1½-inch	+ 6½	+18½
Lap Weld		
2 and 2½-inch	7½	14½
3 to 4-inch	12½	3½
4½ to 6-inch	11½	2½
8-inch	8½	

Boiler Tubes

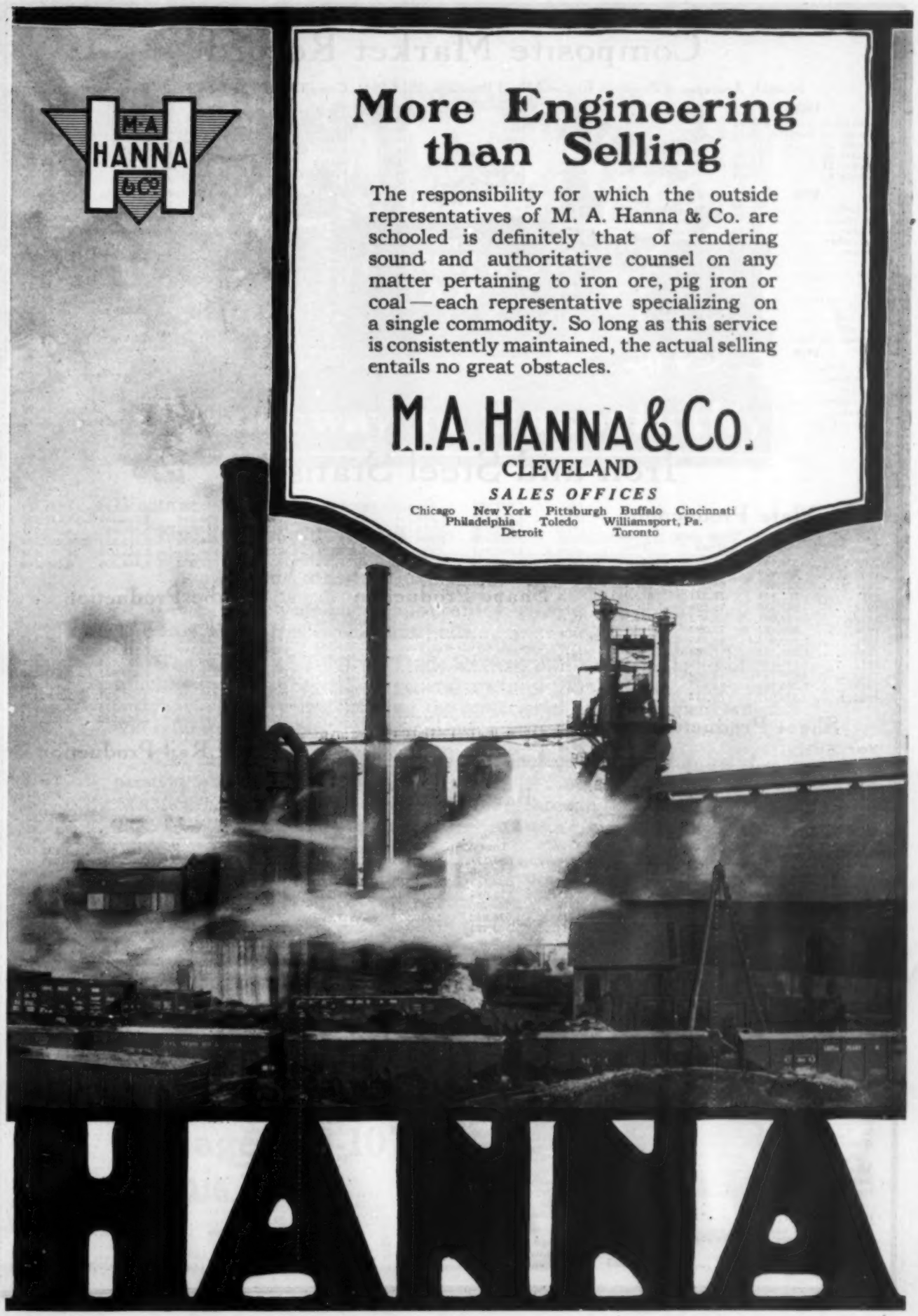
L. C. L. discounts. C. L. discounts take 4-Point differential

STEEL

1¼-inch	22½
2 and 2¼-inch	37
2½ to 3-inch	48
3¼ to 4-inch	53

IRON

1½-inch	1
1¾-inch	11
2 and 2¼-inch	21
2½ to 3-inch	26
3¼ to 4½-inch	28



More Engineering than Selling

The responsibility for which the outside representatives of M. A. Hanna & Co. are schooled is definitely that of rendering sound and authoritative counsel on any matter pertaining to iron ore, pig iron or coal — each representative specializing on a single commodity. So long as this service is consistently maintained, the actual selling entails no great obstacles.

M.A. HANNA & CO.

CLEVELAND

SALES OFFICES

Chicago New York Pittsburgh Buffalo Cincinnati
Philadelphia Toledo Williamsport, Pa.
Detroit Toronto

HANNA

Composite Market Record

Monthly Averages of Fourteen Iron and Steel Products, 1913-1921, Compiled by The Iron Trade Review

1922	
February 1	$32.92
Average for January	33.45
January 25	33.27
January 18	33.36
January 11	33.54
January 4	33.64
1921	
December	33.99
November	34.71
October	35.46
September	35.34
August	35.99
July	38.14
June	41.87
May	43.32
April	43.84
March	45.37
February	48.81
January	51.98
Average for year	40.74
1920	
December	54.04
November	63.75
October	68.61
September	68.86
August	68.87
July	68.69
June	$68.29
May	68.66
April	67.49
March	65.47
February	65.63
January	59.40
Average for year	65.65
1919	
December	$5.20
November	52.37
October	49.16
September	48.75
August	48.67
July	48.26
June	48.28
May	48.69
April	48.85
March	52.68
February	53.71
January	53.81
Average for year	50.70
1918	
December	57.24
November	55.67
October	57.53
September	56.56
August	56.67
July	$56.66
June	56.62
May	56.59
April	56.59
March	56.71
February	56.67
January	56.67
Average for year	56.68
1917	
December	56.68
November	58.29
October	67.75
September	83.18
August	89.69
July	89.56
June	82.66
May	73.96
April	66.48
March	61.07
February	56.76
January	55.10
Average for year	70.10
1916	
December	53.68
November	46.77
October	41.50
September	39.97
August	$39.67
July	38.37
June	39.63
May	39.78
April	39.13
March	37.18
February	35.63
January	33.66
Average for year	40.50
1915	
December	31.56
November	28.64
October	26.19
September	25.55
August	24.77
July	24.25
June	23.74
May	22.89
April	22.66
March	22.71
February	22.21
January	21.90
Average for year	24.76
1914	
December	21.58
November	23.39
October	$22.84
September	23.17
August	22.72
July	22.17
June	22.58
May	22.99
April	23.39
March	23.60
February	23.52
January	23.03
Average for year	22.92
1913	
December	23.29
November	24.02
October	24.91
September	25.55
August	25.97
July	26.34
June	26.78
May	27.34
April	27.74
March	27.93
February	28.05
January	27.96
Average for year	26.32

Iron and Steel Statistics

Tin Plate Production

Year	Tin plate Tons	Terne plate Tons	Total Tons
1908	524,448	77,090	601,538
1909	589,929	95,465	685,394
1910	725,411	84,092	809,503
1911	798,814	79,221	878,035
1912	982,830	95,698	1,078,528
1913	854,093	68,472	922,565
1914	969,892	73,098	1,042,990
1915	1,100,913	81,735	1,182,648
1916	1,276,113	107,088	1,383,201
1917	1,616,658	76,946	1,693,604
1918	1,608,124	42,689	1,650,813
1919	1,203,579	85,427	1,289,006
1920	1,339,977	69,112	1,609,089

Sheet Production

Year	Tons
1913	1,921,001
1914	1,668,644
1915	2,106,298
1916	2,492,794
1917	2,595,606
1918	2,176,537
1919	2,316,057
1920	3,133,217

Plate Production

Year	Sheared Tons	Universal Tons	Total Tons
1913	1,844,354	1,158,416	3,002,770
1914	1,346,308	766,133	2,112,441
1915	1,923,199	954,852	2,878,051
1916	2,453,150	1,224,234	3,677,384
1917	2,963,039	1,195,199	4,158,238
1918	3,885,126	1,234,782	5,119,908
1919	2,899,967	992,054	3,892,021
1920	3,505,364	1,249,769	4,755,133

Shape Production

Year	Gross tons
1908	1,083,181
1909	2,275,562
1910	2,266,890
1911	1,912,367
1912	2,846,487
1913	3,004,972
1914	2,031,124
1915	2,437,003
1916	3,029,964
1917	3,110,000
1918	2,849,969
1919	2,614,036
1920	3,306,748

Bar Production

	Gross Tons		
Year	Iron Tons	Steel Tons	Total Tons
1908	685,233	1,301,405	1,986,638
1909	952,230	2,311,301	3,263,531
1910	1,074,163	2,711,568	3,785,731
1911	835,625	2,211,737	3,047,362
1912	944,790	2,752,324	3,697,114
1913	1,026,632	2,930,977	3,957,609
1914	563,171	1,960,460	2,523,631
1915	657,107	3,474,135	4,131,242
1916	993,948	5,236,354	6,230,302
1917	983,926	5,226,031	6,209,957
1918	846,898	5,395,851	6,242,749
1919	446,549	3,945,075	4,391,624
1920	663,032	5,467,208	6,130,240

Tube Production

Year	Iron	Steel	Total
1913	276,067	1,969,465	2,245,532
1914	212,147	1,525,557	1,737,704
1915	206,513	1,713,161	1,919,674
1916	278,117	2,372,941	2,651,058
1917	273,890	2,213,087	2,486,977
1918	202,958	2,087,521	2,290,479
1919	162,356	2,212,575	2,374,931
1920	199,673	2,803,052	3,002,725

Steel Rail Production

Year	Tons
1908	1,920,944
1909	3,023,845
1910	3,635,801
1911	2,822,556
1912	3,327,915
1913	3,502,780
1914	1,945,095
1915	2,204,203
1916	2,854,518
1917	2,944,161
1918	2,540,892
1919	2,203,843
1920	2,604,116

Freight Rates

Pig Iron

Mahoning and Shenango valleys to:	
Cleveland	$1.96
Newark, N. J.	6.72
Boston	7.28
Philadelphia	6.32
Pittsburgh	1.96
Chicago	5.32
St Louis	6.44
Minneapolis, St. Paul	7.60
Buffalo to:	
Albany, N. Y.	$2.52
New England (rail)	5.46
New York and Brooklyn (rail)	5.46
Virginia furnaces to:	
Philadelphia	$5.74
New England	6.58
Brooklyn, Jersey City, Newark	6.16
Birmingham, Ala., to:	
Boston	$10.665
Boston (rail and water)	7.65
Cincinnati	4.50
Chicago	6.66
Cleveland	6.66
Louisville, Ky.	4.12
Minneapolis, St. Paul	9.73
New York	10.265
Philadelphia	8.665
Pittsburgh	7.60
Savannah, Ga.	4.25
St. Louis	5.725
Chicago to:	
Des Moines	$4.725
Minneapolis, St. Paul	3.375
Milwaukee	0.89
Moline, Ill.	1.89
Omaha	6.07
St. Louis	2.80
Ironton and Jackson, O., to:	
Chicago	$5.32
Cincinnati	2.52
Cleveland	3.36
Detroit	3.64
Indianapolis	3.22
Minneapolis, St. Paul	8.40

Finished Material

Pittsburgh, carloads, per 100 pounds, to:	
New York	$0.38
Philadelphia	0.36
Boston	0.405
Buffalo	0.295
Baltimore	0.35
Cleveland	0.24
Cincinnati	0.32
Chicago	0.38
Detroit	0.32
Minneapolis and St. Paul	0.66
Denver	1.32
St. Louis	0.475
New Orleans	0.515
Birmingham	0.765
Pacific coast (all rail)	1.665
Pacific coast (tin plate)	1.665

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Read the Classified Advertisements on pages 99-107 of this issue

Iron and Steel Scrap Prices

CORRECTED TO TUESDAY NOON GROSS TONS DELIVERED TO CONSUMER

Steel Works Scrap

HEAVY MELTING STEEL

Birmingham	$11.00 to 12.00
Boston (dealers)	8.00 to 8.50
Buffalo	**13.50**
Chicago	11.00 to 11.50
Cincinnati	9.00 to 9.50
Cleveland	11.75to 12.00
Detroit (dealers)	8.25 to 8.75
Eastern Pennsylvania	12.00 to 12.50
New York (dealers)	7.50 to 8.00
Pittsburgh	13.75 to 14.25
San Francisco	**9.00 to 10.00**
St. Louis	10.50 to 11.00
Valleys	14.00 to 14.25

BUNDLED SHEETS

Buffalo	**$7.00 to 7.50**
Cleveland (hydraulic)	9.00 to 9.50
Cincinnati	4.00 to 4.50
Eastern Pennsylvania	**9.50 to 10.00**
Pittsburgh	10.25 to 10.75
St. Louis	4.25 to 4.75
Valley (hydraulic)	11.75 to 12.00

STEEL RAILS, SHORT

Birmingham	$12.00 to 12.50
Boston (dealers)	**9.00 to 10.00**
Chicago	13.00 to 13.50
Cincinnati	11.50 to 12.00
Cleveland	**11.00 to 11.25**
St. Louis	12.50 to 13.00

STOVE PLATE

Birmingham	$13.50 to 14.00
Boston	**11.50 to 12.00**
Buffalo	15.00 to 16.00
Chicago	**14.00 to 14.50**
Cincinnati (net)	9.00 to 9.50
Cleveland	**13.00 to 13.25**
Detroit	10.00 to 11.00
Eastern Pennsylvania	**14.00 to 14.50**
New York	9.50 to 10.00
Pittsburgh	12.50 to 13.00
St. Louis	12.00 to 12.50

LOW PHOSPHORUS

Buffalo	$17.00
Cincinnati	16.50 to 17.00
Eastern Pennsylvania	**16.50 to 17.00**
Pitts. billet and bloom crops	17.00 to 17.50

SHOVELING STEEL

Chicago	$10.75 to 11.00
Pittsburgh	10.50 to 11.00
St. Louis	10.50 to 11.00

KNUCKLES, COUPLERS & SPRINGS

Chicago	$12.25 to 12.75
Eastern Pennsylvania	**15.00 to 16.00**
Pittsburgh	14.50 to 15.00
St. Louis	12.00 to 12.50

COMPRESSED SHEETS

Buffalo	$11.00 to 12.00
Chicago	7.00 to 7.50
Pittsburgh	**11.50 to 12.00**

FROGS, SWITCHES, GUARDS

Chicago	$11.00 to 11.50
Eastern Pennsylvania	12.00 to 12.50
St. Louis	10.00 to 10.50

BOILER PLATE, CUT

Detroit (dealers)	$6.00
St. Louis (dealers)	6.50 to 7.00

ANGLE BARS—STEEL

Chicago	$11.50 to 12.00
St. Louis	9.00 to 9.50

Iron Mill Scrap

RAILROAD WROUGHT

Birmingham, No. 1	$11.50 to 12.00
Boston (dealers)	11.00 to 12.00
Buffalo	15.00 to 16.00
Chicago, No. 1	11.50 to 12.00
Chicago, No. 2	11.00 to 11.50
Cincinnati, No. 1	9.50 to 10.00
Cleveland, No. 1	**12.00 to 12.25**
Eastern Pennsylvani , No. 1	15.00 to 16.00
Pittsburgh, No. 1	12.00 to 12.50
Pittsburgh, No. 2	13.50 to 14.00
Pittsburgh, No. 2	14.00 to 14.50
St. Louis, No. 1	11.50 to 12.00
St. Louis, No. 2	11.00 to 11.50

WROUGHT PIPE

Boston (dealers)	$7.25 to 7.75
Buffalo	**9.50 to 10.50**
Eastern Pennsylvania	12.00 to 12.50
New York (dealers)	7.00 to 7.50

YARD WROUGHT

Boston	**$8.00 to 9.00**
Eastern Pennsylvania, No. 1	**13.00 to 13.50**

CITY WROUGHT

New York, long	$10.50 to 11.00

BUSHELING

Buffalo, No. 1	$11.00 to 12.00
Chicago, No. 1	9.00 to 9.50
Chicago, No. 2	6.25 to 6.75
Cincinnati, No. 1	7.50 to 8.00
Cleveland, No. 1	**8.75 to 9.00**
Cleveland, No. 2	7.00 to 7.25
Eastern Pennsylvania, No. 1	11.50 to 12.50
Pittsburgh, No. 1	11.25 to 11.50
St. Louis, No. 1	10.00 to 10.50

MACHINE SHOP TURNINGS

Birmingham	$3.50 to 5.00
Boston (dealers)	3.50 to 4.00
Buffalo	8.00 to 9.00
Chicago	5.00 to 5.50
Cincinnati	3.50
Cleveland	8.50 to 9.00
Detroit (dealers)	4.50 to 5.00
Eastern Pennsylvania	**9.50 to 10.00**
New York (dealers)	4.50 to 5.00
Pittsburgh	9.25 to 9.75
St. Louis	4.50 to 5.00
Valleys	**9.00 to 9.25**

CAST IRON BORINGS

Birmingham (chemical)	13.40
Boston (chemical)	8.00 to 9.00
Boston (dealers)	7.00 to 8.00
Buffalo	**8.50 to 9.50**
Chicago	6.50 to 7.00
Cincinnati	4.00 to 4.50
Cleveland	8.00 to 8.50
Detroit (dealers)	6.50 to 7.00
Eastern Pennsylvania	12.00 to 12.50
Eastern Pennsylvania (chemical)	13.50 to 14.00
Pittsburgh	11.00 to 11.50
New York (dealers' price)	7.50 to 8.00
St. Louis	**7.00 to 7.50**
Valleys	10.75 to 11.00

MIXED BORINGS AND TURNINGS

(For blast furnace use)

Boston (dealers)	$4.00 to 4.50
Cleveland	8.85 to 9.25
Eastern Pennsylvani	9.50 to 10.00
New York (dealers)	4.50 to 5.00

IRON AXLES

Birmingham	$18.00 to 19.00
Buffalo	**26.00**
Chicago	22.00 to 22.50
Cincinnati	17.00 to 17.50
Cleveland	**19.00 to 20.00**
Detroit	19.00
Eastern Pennsylvania	25.00 to 26.00
New York (dealers)	20.00 to 21.50
Pittsburgh	**26.00 to 26.50**
St. Louis	21.00 to 21.50

IRON RAILS

Buffalo	$17.00 to 18.00
Chicago	16.00 to 16.50
Cincinnati	11.50 to 12.50
Cleveland	**13.50 to 14.00**

PIPES AND FLUES

Chicago	$6.50 to 7.00
Cincinnati	4.50 to 5.00
Cleveland	**9.00 to 9.50**
Detroit	5.00 to 6.00
St. Louis	8.00 to 8.50

RAILROAD GRATE BARS

Buffalo	$12.00 to 13.00
Chicago	11.75 to 12.25
Cleveland	13.00 to 13.25
Detroit	8.00 to 9.00
Eastern Pennsylvania	14.00 to 14.50
New York (dealers)	**9.50 to 10.00**
St. Louis	10.50 to 11.00

FORGE FLASHINGS

Boston (dealers)	**$4.50 to 5.00**
Chicago, small	7.00 to 7.50
Cleveland, small	9.00 to 9.25
Cleveland, large	7.50 to 7.75
Detroit (dealers)	5.00 to 5.50

FORGE SCRAP

Boston	**$4.50 to 5.00**
Chicago	11.00 to 11.50
Eastern Pennsylvania, No. 1	**10.00 to 10.50**

ARCH BARS AND TRANSOMS

Chicago	$16.50 to 17.00
St. Louis	16.00 to 16.50

ANGLE BARS—IRON

Chicago	$15.00 to 15.50
St. Louis	11.50 to 12.00

Iron and Steel Works Scrap

AXLE TURNINGS

Boston (dealers)	**$4.75 to 5.25**
Buffalo	11.00 to 12.00
Chicago	7.50 to 8.00
Cleveland	**9.00 to 9.50**
Detroit	7.00 to 7.50
Eastern Pennsylvania	**10.00 to 10.50**
Pittsburgh	11.50 to 12.00
St. Louis	6.50 to 7.00

STEEL CAR AXLES

Birmingham	$14.00 to 16.50
Boston (dealers)	12.00 to 12.50
Buffalo	**20.00 to 21.00**
Chicago	14.00 to 14.50
Cleveland	17.00 to 17.25
Eastern Pennsylvania	**17.00 to 18.00**
New York (dealers)	11.00 to 11.50
Pittsburgh	14.00 to 15.00
St. Louis	14.50 to 15.00

SHAFTING

Boston (dealers)	**$13.00 to 14.00**
Chicago	16.25 to 16.75
Eastern Pennsylvania	**19.50 to 20.00**
New York (dealers)	12.50 to 13.00
St. Louis	14.00 to 14.50

Iron Foundry Scrap

CAR WHEELS

Birmingham, iron	$13.00 to 13.50
Birmingham, tram car	12.00 to 12.50
Boston (consumers)	**15.00 to 16.00**
Buffalo, iron	15.50 to 16.50
Chicago, iron	14.50 to 15.00
Cincinnati	11.50 to 12.00
Cleveland, iron	13.00 to 13.50
Detroit	**11.50 to 12.00**
Eastern Pennsylvania, iron	**16.50 to 17.00**
New York, iron (dealers)	11.00 to 11.50
Pittsburgh, iron	14.50 to 15.00
Pittsburgh, steel	14.50 to 15.00
St. Louis, iron	14.00 to 14.50

NO. 1 CAST SCRAP

Birmingham, cupola	$16.00 to 16.50
Boston (consumers)	17.50 to 18.00
Buffalo	16.00 to 17.00
Chicago, cupola	14.50 to 15.00
Cincinnati, No. 1, machinery, cupola (net)	13.00 to 13.50
Cleveland, cupola	16.50 to 17.00
Eastern Pennsylvania, cupola	16.50 to 17.50
New York, cupola (dealers)	13.50 to 14.00
Pittsburgh, cupola	16.00 to 16.50
San Francisco	22.00 to 23.00
St. Louis, agricultural	15.50 to 16.00
St. Louis, railroad	15.00 to 15.50
Valleys	**16.50 to 17.00**

HEAVY CAST

Boston (consumers)	$17.00 to 17.50
Buffalo	14.00 to 14.50
Cleveland	**12.00 to 12.25**
Eastern Pennsylvania	15.00 to 16.00
New York (dealers)	13.00 to 13.50
Pittsburgh	14.25 to 14.75

MALLEABLE

Boston, railroad	**$12.50 to 13.00**
Buffalo	13.00 to 14.00
Chicago, railroad	12.25 to 12.75
Chicago, agricultural	12.25 to 12.75
Cincinnati, agricultural	8.50 to 9.00
Cincinnati, railroad	8.50 to 9.00
Cleveland, agricultural	**10.25 to 10.50**
Cleveland, railroad	12.25 to 12.50
Detroit	8.50 to 9.00
Eastern Pennsylvania, railroad	13.00 to 14.00
Pittsburgh, railroad	12.00 to 12.50
Pittsburgh, agricultural	**11.50 to 12.00**
St. Louis, agricultural	9.00 to 9.50
St. Louis, railroad	9.00 to 9.50

Miscellaneous Scrap

REROLLING RAILS

5 feet and over

Birmingham	$12.00 to 13.50
Boston (dealers)	10.50 to 10.75
Chicago	11.25 to 11.75
Cleveland	**15.00 to 16.00**
Detroit (dealers)	9.00 to 9.50
Eastern Pennsylvania	**16.00 to 16.50**
New York (dealers)	13.50 to 14.50
Pittsburgh district	15.50 to 16.00
St. Louis	11.00 to 11.50

LOCOMOTIVE TIRES

Chicago	$10.50 to 11.00
St. Louis	**9.50 to 10.00**

LOW PHOSPHORUS PUNCHINGS

Chicago	$11.50 to 12.00
Eastern Pennsylvania	15.00 to 16.00
Pittsburgh	14.50 to 15.00